The Only Journal With a Paid Circulation in the Rock Products Industry

Rock Products

Chicago, May 3, 1924 FOUNDED 1902 Volume XXVII, No. 9

TAYLOR-WHARTON IRON & STEEL CO.

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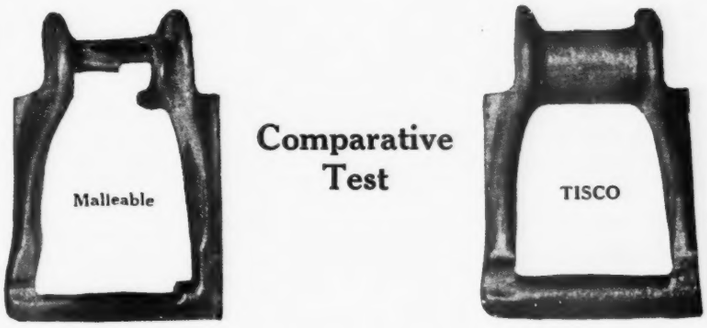

Comparative Test

These two links were placed in the same line of chain at the same time and taken out and photographed at the same time. One is completely worn out; one is as good as ever.

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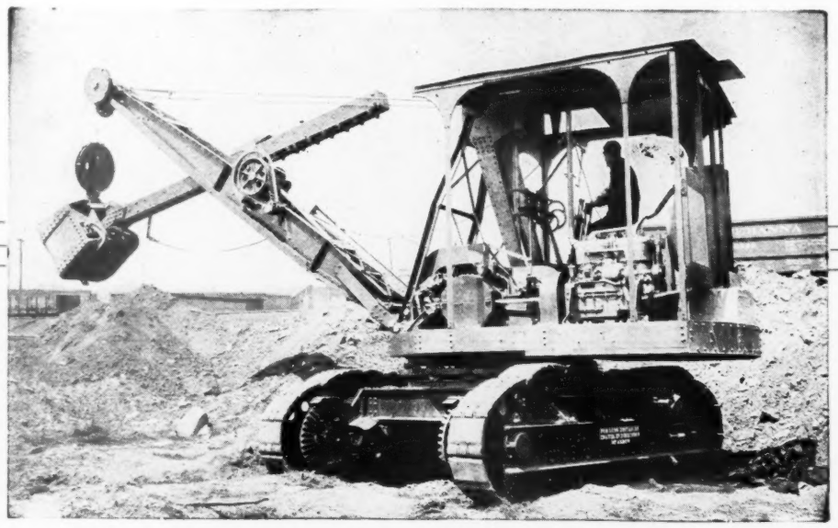
MEMBER AUDIT BUREAU OF CIRCULATIONS MEMBER ASSOCIATED BUSINESS PAPERS

ISSUED EVERY OTHER WEEK—NEXT ISSUE WILL BE MAY 17



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Rock Products

Volume XXVII | Chicago, May 3, 1924 | Number 9

Is Mining a Profession and Quarrying a Job?

IN his discussion of mining vs. quarrying in ROCK PRODUCTS, April 19, p. 27, J. R. Thoenen remarks that to a mining engineer, mining is a profession and quarrying a job.

There may not be much adventure to quarrying but it does take one into picturesque parts of the country, just as much as mining. There may not be the romance of working underground, but there is real romance in being in the great outdoors.

The New York City mining engineer who thinks that all mining is conducted in the Rocky Mountains, in Alaska, in South America and South Africa, fails to see operations quite as important and perhaps fully as interesting in the Jersey hills.

We are indebted to D. M. Mechan, superintendent of the Commonwealth Quarry Co., East Summit, N. J., for the aerial view of his quarry, shown below. He writes:

"This plant has at the present time a daily capacity of 1000 tons. The photograph shows clearly all our quarry equipment, excepting our Erie 'B' shovel and our two 'Cyclone' well drills. The shovel shown in the photograph is a Marion 36, which does the bulk of the loading of stone at the quarry face for the crusher. Plymouth gasoline locomotives are used in transporting the stone.

"The greater part of the quarry face is not shown in the photograph and is located to the right. It is 80 ft. high and 400 ft. long.

"The railroad tracks shown are our two sidings and a portion of the main line of the Rahway Valley R. R. which is a small line about 10 miles long running from Summit to junctions with the Lehigh Valley and Central New Jersey at Roselle Park and Aldene respectively."

Aerial view of the plant of the Commonwealth Quarry Co., East Summit, N. J.

Big New Concrete Brick Plant at Philadelphia

Capacity Daily Production of 150,000 Bricks Started This Week

By A. B. Sanger
Of Rock Products Staff

IN PHILADELPHIA, there has been a long standing prejudice in favor of clay brick for both filling and facing, but the Pennsylvania Brick and Tile Co. of that city has stimulated considerable interest in (and secured many orders for) concrete brick; thus showing that a product which has merit can be placed in market that is apparently closed to it because of custom or prejudice.

Philadelphia a Big Market

In this city there is an unprecedented amount of building; hotels, office buildings, apartments, etc. It is only natural that with such a large market for brick, enterprising men should try to get a share. This company was formed and operations started after a thorough survey showed that there was a reasonable chance for success.

The operations are practically a straight line process, thus minimizing the handling of materials and products. The raw materials are sand-cement, coloring matter and a chemical binder.

Sand from the Delaware river section is unloaded from barges at the company's dock by a Williams 1½-yd. clamshell bucket which is operated by a Flory double-drum hoist geared to a 60-hp. General Electric induction motor. A feature of this hoist is a capstan attachment which is used to shift the barges.

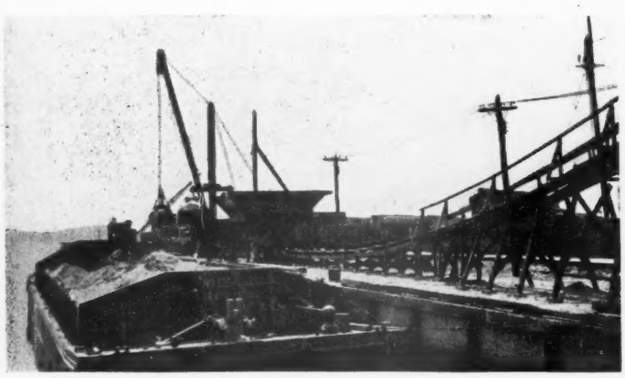
The sand from the barge is dropped into a small hopper which feeds a 16-in. Link-Belt conveyor belt of 310-ft. centers. This belt runs to the top of the main storage bin in which there is a tripper for distributing the sand. This bin holds 4000 yd. or about two weeks' supply.

From this storage bin the sand is carried by a 14-in. belt of about 300-ft. centers to the mixing platform in the main building. The feed to this second belt (also a Link-Belt installation) and its mechanical operations are controlled by the mixer foreman. First he signals he wants sand and then starts the belt; the workman at the loading station under the storage bin upon receiving the signal stands ready to open the gates as soon as the belt starts.

Mixing in Closed Cycle

To the mixing platform which is directly over the brick presses come sand from the storage bin, cement and color mixed from the mixer on the floor and the chemical binder solution from the constant pressure tank under the ridge pole. All these products are fed to the mixers with a closed cycle arrangement; that is, an over supply is carried back to the starting point.

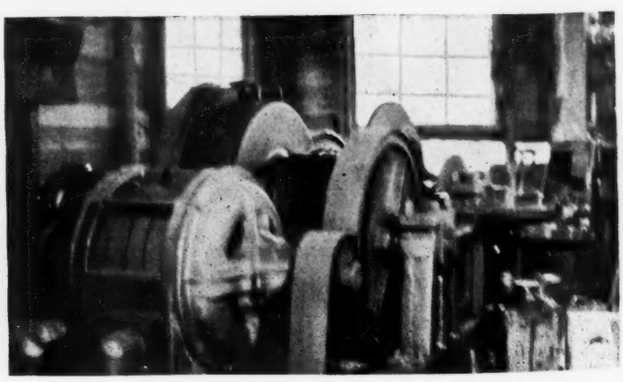
The sand drag scraper built by the Jeffrey



Barge load of sand being unloaded at the dock

Bucket, 1½-yd., used for unloading sand from barges

Belt conveying system between storage and mixing platform



Double drum hoist used to operate the bucket shown above

Manufacturing Co. fills hopper No. 1 before hopper No. 2 gets any, and so on. If there is more sand delivered to the mixers than is required the over supply is carried up on the blades of the scraper to the return side and dumped in hopper No. 1 again.

The cement and color mix is carried to the platform by bucket elevator and then delivered by screw conveyor to each mixing machine. Any over supply is brought by screw conveyor to a pipe which chutes it to the cement and color mixer on the floor. By taking a section out of this chute the operator can tell whether he is delivering an over supply. Each machine may have its supply of cement and color mix cut off independent of the others, while in the sand feed each hopper must keep a full supply before the following one gets any.

Mixing Binder and Color

There are four Kent mixers (Kent Machine Co.) which deliver the sand-cement color and chemical binder mix to the hoppers over the presses. The binder is added after thorough mixing in order to give the proper consistency for pressing. Each mixer takes care of four presses.

On the press floor there are 16 "Anchor" brick machines each operated by one man. The unit of production is 10 bricks to a cycle and about four cycles are worked in a minute—operating time.

From the presses the bricks are placed on pallets which slide onto wheeled racks. These hold 560 bricks each. When loaded they are run by hand to the steam chambers. Moving these racks by power is not feasible, owing to the danger of cracking the bricks; in the raw state they fracture very readily.

The steaming plant is not at all elaborate—consisting merely of eight covered chambers with tarpaulins on each end to act as curtains; otherwise the ends are open. Each chamber will take about 25,000 brick.

Curing by Live Steam

The bricks are cured by live steam which is emitted through small holes in a large pipe extending down each side of the chamber. The temperature is maintained at about 125 deg. F. for 12 hr., so as to give the proper set. The bricks take up moisture according to the type; non-waterproof have 9-11% and waterproof 4-5%.

From the chambers, the bricks are run on a platform operated by motor. This platform delivers to the various distributing points in the storage yards. "Bat" losses are about one-half of 1%.

Bricks are kept in storage about 30 days, during which time they are constantly wetted according to weather conditions.

Deliveries are made at the plant or to the job as the consumer desires. For the latter requirement the company hires trucks as they are needed.

At present two kinds of bricks are being made, "face" and "fillers." The former are grey or red and waterproofed, while the

One of the eight steam chambers in which the bricks are cured with loaded racks run in for curing. The steam pipes are close to the ground on the walls

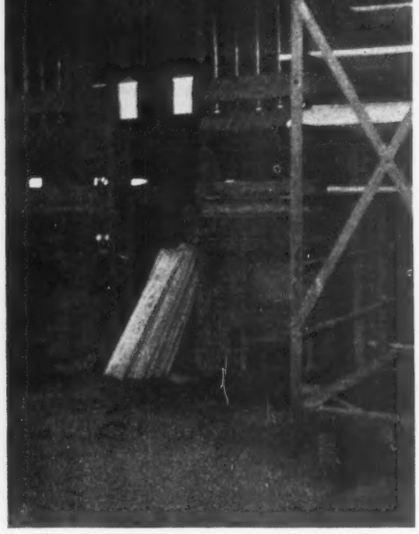
Workmen unloading racks of the cured brick. A truck with electric motor is shown in the foreground

Main building of the concrete brick plant—end of conveyor to mixing plant at the right

Left: Barrels of color and cement storage. Right: L. H. Rockefeller, superintendent, in the center, with E. H. Price, assistant superintendent, at the left, and clerk at the right

latter are grey only and not waterproofed.

For full capacity production, 60 men are required. The basis of pay is piece work for press men, and rack handlers; all others are on an hourly basis. The plant is operating 9 hours a day and 5½ days a week.



Two of the 16 brick presses used in this plant

The plant was designed and built by the Cemprod Engineering and Construction Co. of New York City. The special machines such as the mixers and presses while made by the licensed manufacturer were made according to special drawings of the Cemprod company. All the conveying machinery was installed by the Cemprod company, although the conveyor system was furnished by the Link-Belt Co. and the mixer feeders by the Jeffrey Manufacturing Co.

George H. Heck is general manager; L. H. Rockefeller is superintendent and E. H. Price, assistant superintendent, all men with practical operating experience.

National Slate Association Incorporated

AT THE BUSINESS meeting of the National Slate Association, held April 21 at the Commodore Hotel, New York City, it was announced that in April the state of Delaware had granted the association a charter of incorporation.

The following officers and directors were elected for the coming year: President, George F. Barnard, Boston, Mass.; vice-president, G. H. Shinville, Fair Haven, Vt.; secretary, W. S. Hays, Philadelphia, Pa.; treasurer, A. H. Morrow, West Pawlet, Vt. District Directors: Canada, Wm. Wright; Maine, H. E. Fletcher (acting); New York, E. R. Norton; Vermont, F. C. Sheldon; Vermont, G. H. Shinville; Bangor, Wm. H. Smith; Pen Argyl, N. M. Male; Slatington, James Owens; Chapman, R. D. Chapman; Peach Bottom; Virginia, P. C. Stanwood; Western, C. A. Lowry; Pennsylvania director-at-large, W. S. Ditchett.

Other business which came before the meeting was confined more to internal problems such as a committee's report urging members to keep statistics and report to the U. S. Geological Survey the geographical distribution of their sales. It was also urged that uniform cost methods and forms be followed.

Plans were adopted for closer co-operation with the dealers, distributors and contractors with regard to local advertising; associate members especially were to benefit by this co-operation.

Slate Business Meeting

Very shortly a manual of roofing and one for floors, terraces and walks will be issued to the members for delivery to architects and others specifying or using slate materials. Members will be allowed to imprint their names on this manual.

Another important problem discussed was "traffic" in charge of G. E. Brown. He has accomplished much for the industry and for the members. He urged that everyone who had a traffic or rate problem to take it up with him rather than deal direct with the railroad.

Mr. Brown has moved his headquarters from Belleville, Ill., to 307 Wilber Trust building, Bethlehem, Pa., so as to better serve the industry.

Looking at the work accomplished in the short time since its inception, the association has done wonders. It has solidified "slate sentiment," helped to smooth out difficulties, both mechanical and political. Not a member has been lost and the "doubting Thomases" are gradually joining.

Sand conveyor from dock to storage bin

As in all industries there are some who doubt the advisability of association activities. They are sincere in this attitude. Yet, it would seem that those who are now "out" will benefit not only the industry but themselves by joining hands with those few who had the courage and foresight needed to get together. The founders of the association have brought about excellent results, but more can be obtained if every slate producer will take an active interest in the association.

American Portland Cement Manufacturers to Celebrate at Los Angeles

Hundredth Anniversary of Aspdin's Invention to Be Observed with Appropriate Ceremonies at the May Meeting of Portland Cement Association

FOR the first time in several years the annual spring meeting of the Portland Cement Association will be held on the West Coast. The Biltmore hotel at Los Angeles, May 20-23, is the place and time.

Probably this will be the first opportunity a number of manufacturers have had to see developments in the industry since the last West Coast meeting. They will find many changes and more developments than in almost any other section of the country.

The Riverside Portland Cement Co., the Los Angeles pioneer producer, has turned a whole mountain of limestone into cement and have had to open a new quarry several miles from the old one. This plant is remembered chiefly for its beautiful location, in the heart of one of the garden spots of the world. And it has continued to live up to its environment.

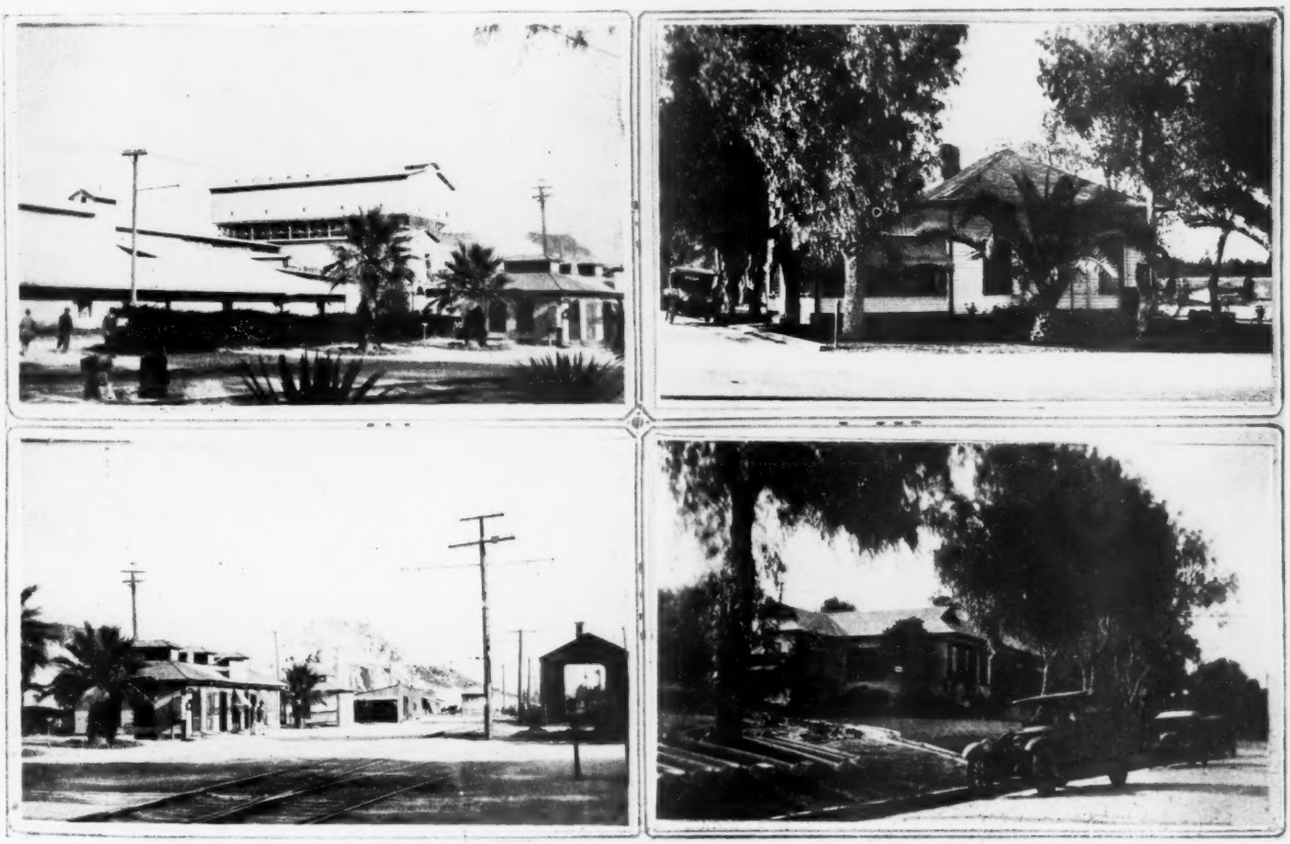
The original plant is not much changed. Since the last cement meeting on the coast the Riverside company has taken over the old Golden State Portland Cement Co. plant at Oro Grande (just east of Victorville) and have converted it to a thoroughly up-to-date operation.

Big Changes at Victorville

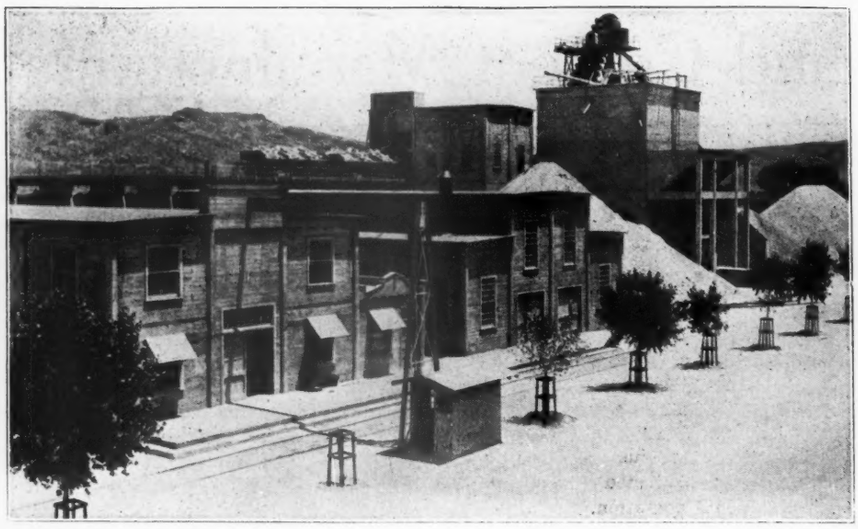
At Victorville the Southwestern Portland Cement Co. will be found to have kept pace with the portland cement industry in a remarkable manner. The views herewith show the original one-kiln plant, reputed at the time it was built to be the finest in the country. The second, third and fourth kilns have been successively added, and it surely keeps its place in the front rank, in spite of many newer plants. It is a plant that is still its owners' pride and justly so, for all the changes and additions have been made not only without hurting the appearance of the plant, but actually improving it.

Here the visitor will see how concrete can be used to advantage in the construction of a portland cement mill. It has always been President Carl Leonardt's boast that the slogan "concrete for permanence" applied to cement-mill construction as well as other types of construction. He has carried out his policy and has produced not only a permanent four-kiln plant but a remarkably handsome and efficient one.

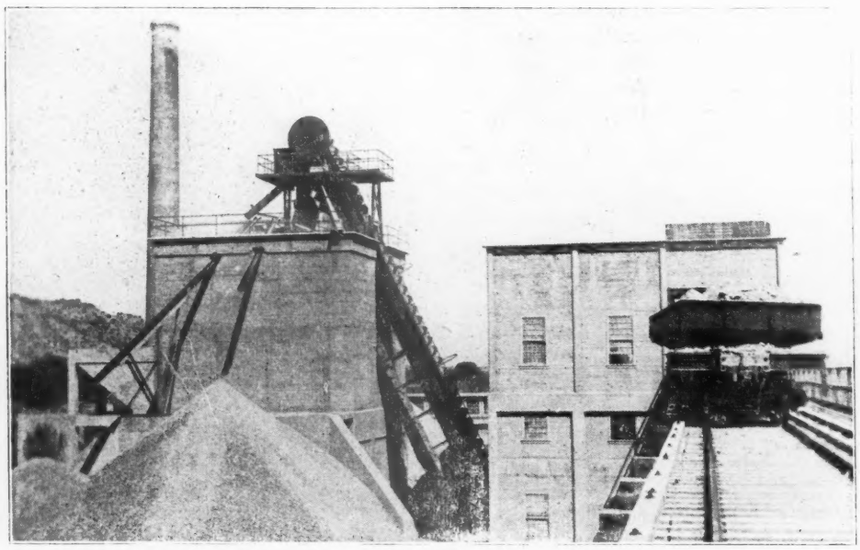
The quarry operation has of course been considerably expanded and new faces opened. The crushing plant has been changed in a number of details. The pole dumper, with its pneumatic cushioned socket that was always interesting to operating men, has been replaced by a still



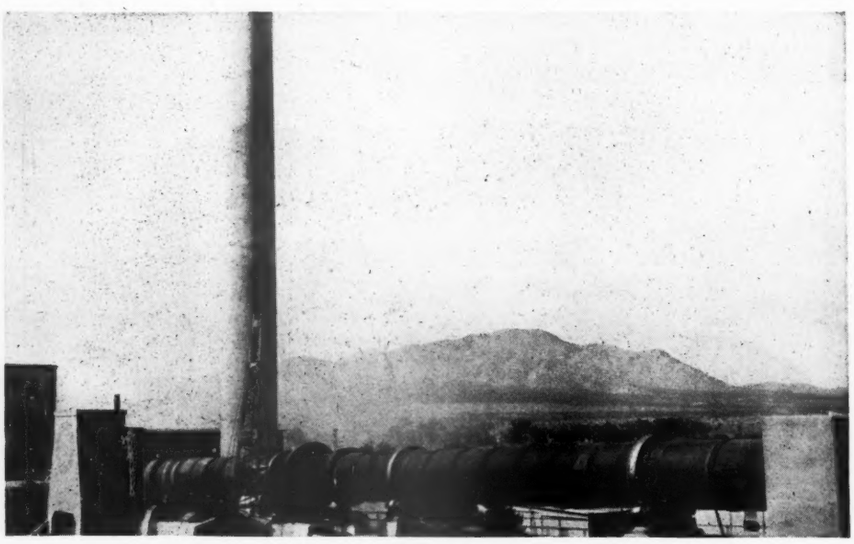
Plant and offices of the Riverside Portland Cement Co., Riverside, Calif.



Southwestern Portland Cement Co. plant at Victorville as it was originally



Crusher house and raw material bins of original plant



Original No. 1 kiln of the Southwestern plant

more interesting device, which Superintendent L. V. Robinson says is the "greatest little kink" about the plant. This is a specially constructed hook so hung from a block and tackle that it hooks and unhooks to a socket on the side of the car skip by simply raising and lowering the hook on the hoist line. This is done by the crusher tender, thus saving the labor of the man required to place the pole in the old scheme of things.

Crushing Plant Changes

The original primary crusher, a large size Fairmount slugger roll crusher, has been moved over and is now used as a secondary crusher. The new primary crusher is a 48x60-in. Allis-Chalmers jaw crusher. As the views herewith show it is provided with railed stairways and every convenience for keeping it oiled and in ship shape with a minimum of effort and a maximum of safety.

Other changes at the crushing plant include the installation of a new type of feeder grizzly built by the Stephens-Adamson Manufacturing Co. but largely designed by the Southwestern people. This takes the material from the crushers on the ground floor of the crushing plant and removes the fines and feeds the coarse material to the Williams Jumbo hammer mill—thus greatly increasing its capacity.

Much has been added to the original plant in storage facilities for crushed limestone and shale. And these are now handled by an overhead belt conveyor to the cement mill.

The power plant has grown apace with the rest of the mill and is Superintendent Robinson's particular pride. Both exterior and interior delight the eye of every visitor.

The two newest kilns are 10 ft. 6 in. by 200 ft. The two older ones are 9 ft. by 200 ft. Some changes have been made in slurry grinding and slurry handling, but in these respects the original scheme has in the main proved highly satisfactory.

"Kink" Lengthens Life of Compeb Mill Feeders

A little "kink" that Superintendent Robinson has devised to lengthen the life of the screw feeders of his slurry compeb mills is to drill a hole through the center of the screw shaft and connect the end with a small stream of water. The circulating water keeps the slurry grains moving instead of sticking and wearing out the screw blades and simply takes the place of water otherwise added in the feed hopper. There is a considerable amount of silica in the raw materials here so that this wearing of the screw feeders may be more serious than at the average cement mill.

The clinker-handling end of the mill has been entirely changed. It will be remembered that originally the clinker was han-

dled to and from storage by a locomotive crane on an elevated track parallel to one side of the plant. Following what is now quite general practice an overhead traveling crane (Pawling and Harnischfeger) has been substituted for the locomotive crane.

Permanent Concrete "Patio" Dwelling for Mexicans

The changes mentioned and illustrated are only a few features that will interest the cement-plant operator about this mill. A feature that will interest not only other operators but builders and the general public as well is the provision for housing the Mexican labor.

"Greatest little kink" at the Victorville plant—illustrated in more detail on page 37

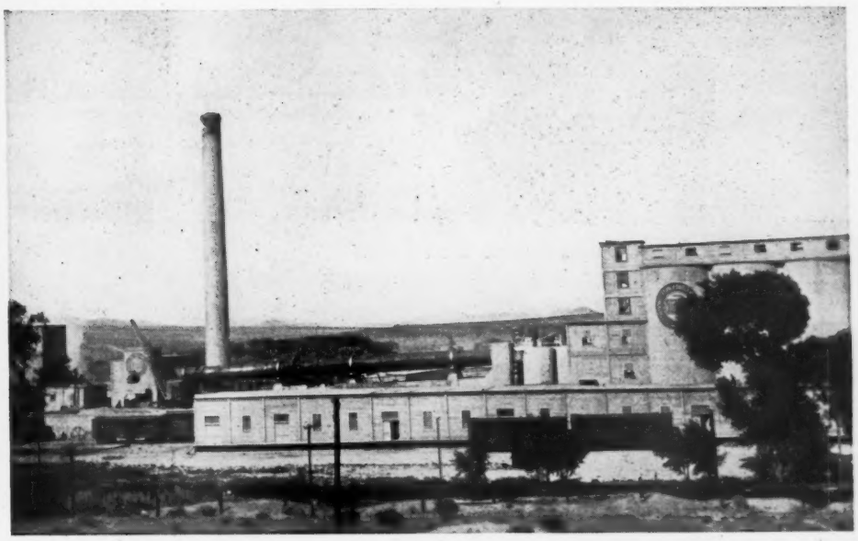
Bearing in mind the great love of Mexicans for the patio type of dwellings, the company has supplied these in neat, attractive and sanitary manner in reinforced-concrete. Two of the accompanying views show how attractive these dwellings have been made.

The Superior Plant in Washington State

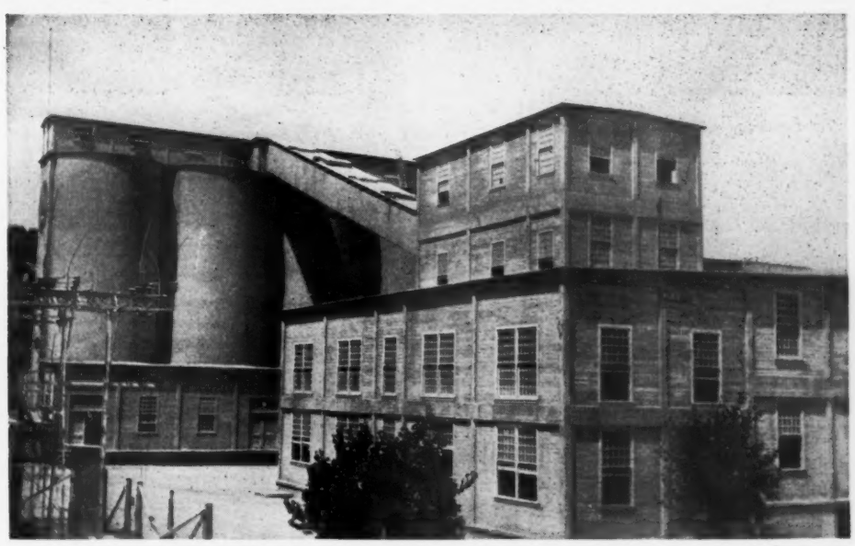
Those who complete the circuit of the West Coast will of course include Seattle and Concrete, Wash., in their itinerary, for John C. Eden is another portland cement manufacturer who has put the slogan "concrete for permanence" into practice.

The Superior Portland Cement Co. plant has been entirely rebuilt in reinforced-

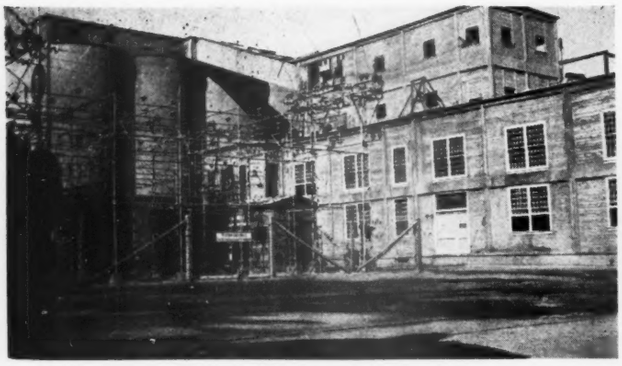
Another view of the original plant showing early start for looks as well as efficiency



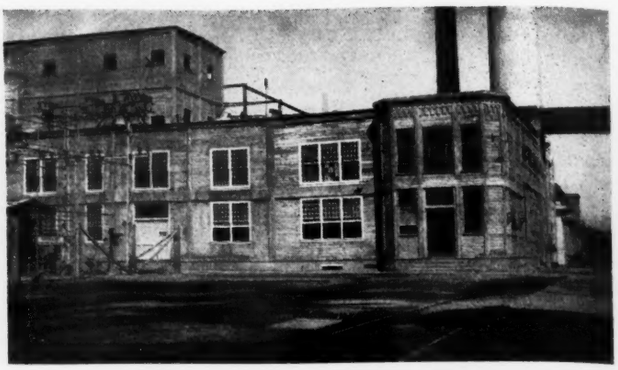
Original plant as seen from the tracks of the Santa Fe Railway



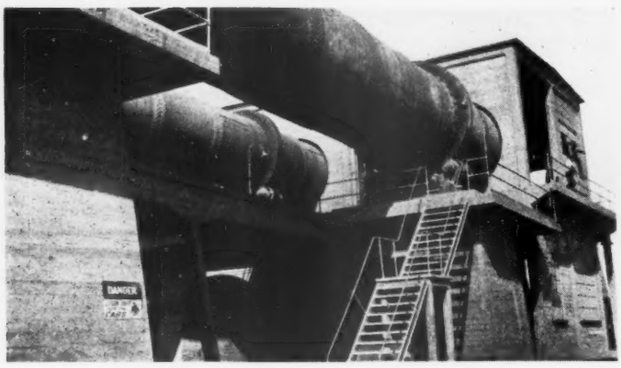
Original plant showing early adherence to looks as well as permanency of construction



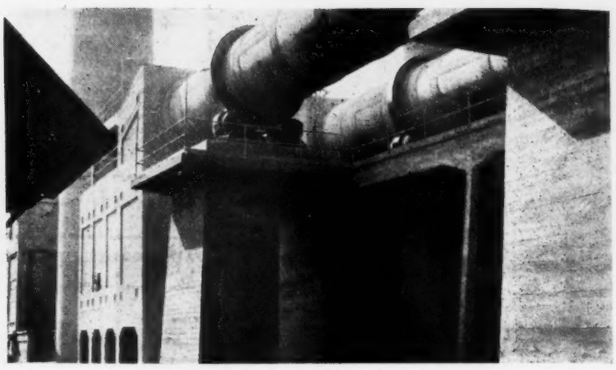
Transformer station and power plant



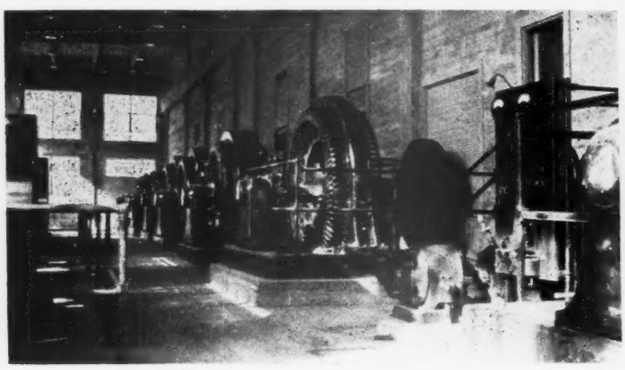
Power plant showing entrance



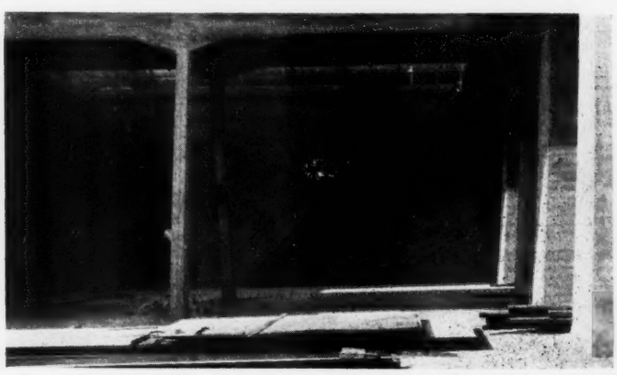
Kilns Nos. 3 and 4—the most recent



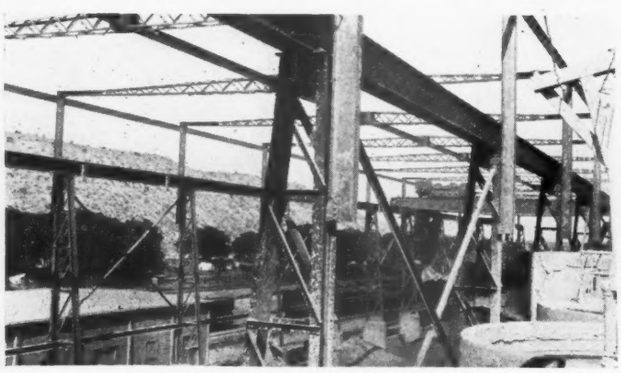
Another view of kilns Nos. 3 and 4



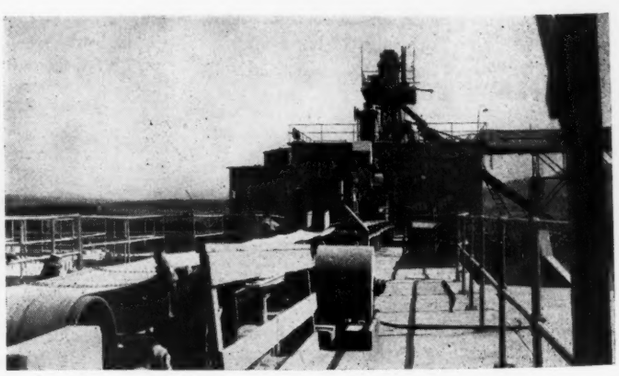
Interior of power plant showing compeb mill drives



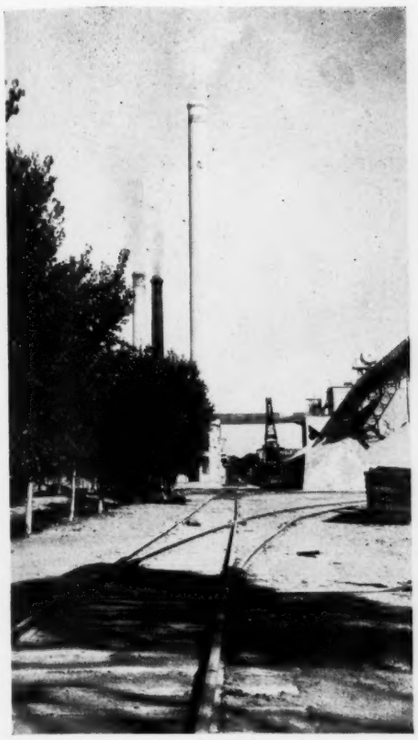
Various types of reinforced-concrete construction



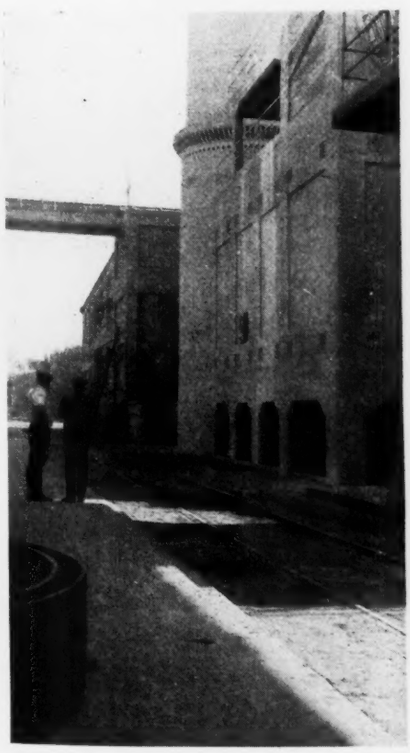
Clinker handling crane



Raw material conveyor—looking toward crushing plant

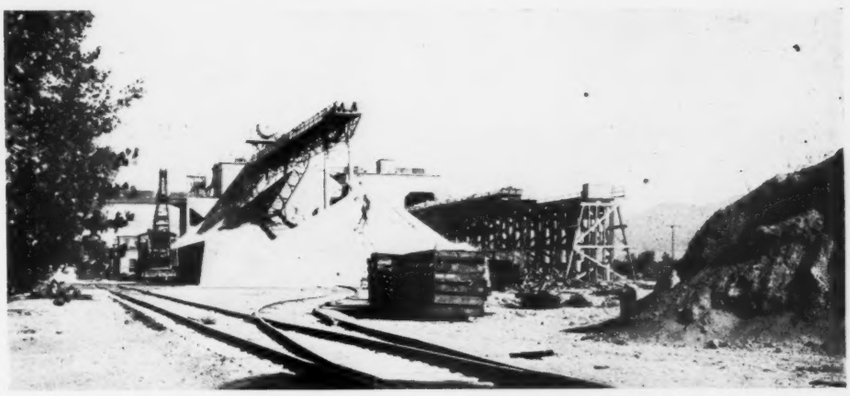


Newest concrete stack—the C.L.—a thing of beauty in itself — also shows overhead conveyor connecting raw material storage with mill on the left



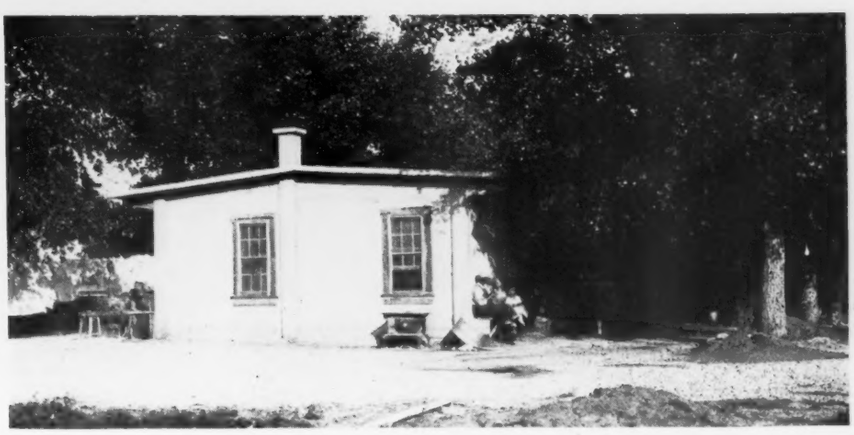
Near view of base of new stack and side of mill room showing architecture applied to cement mill design and art to concrete construction. Superintendent L. V. Robinson (left) admiring his handiwork rather than face the camera

Machine shop on left and kiln No. 4 on the right



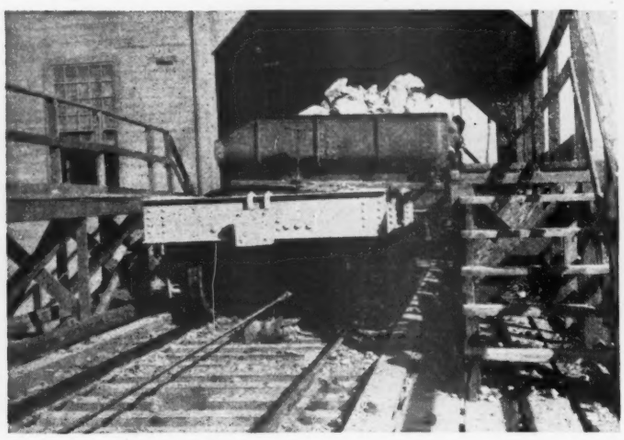
View of crushing plant and raw material storage

Patio dwellings for Mexican laborers

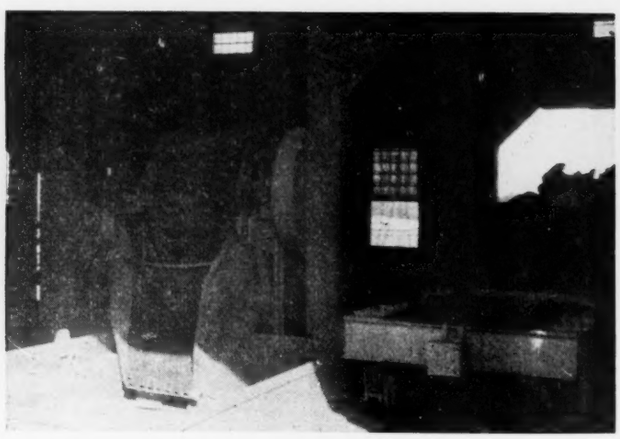


End view of patio dwelling of concrete construction

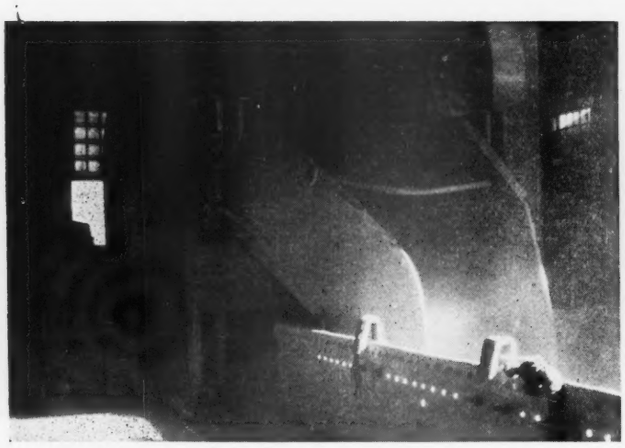
One of the magnificent quarry faces of the Victorville plant of the Southwestern Portland Cement Co. There is another from which this view was taken and a third face around the end of the one shown



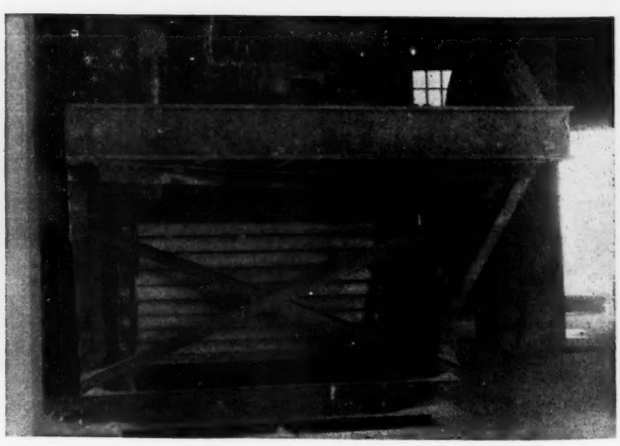
Quarry cars—standard gage, all-steel, with three 10-yd. skips to a car



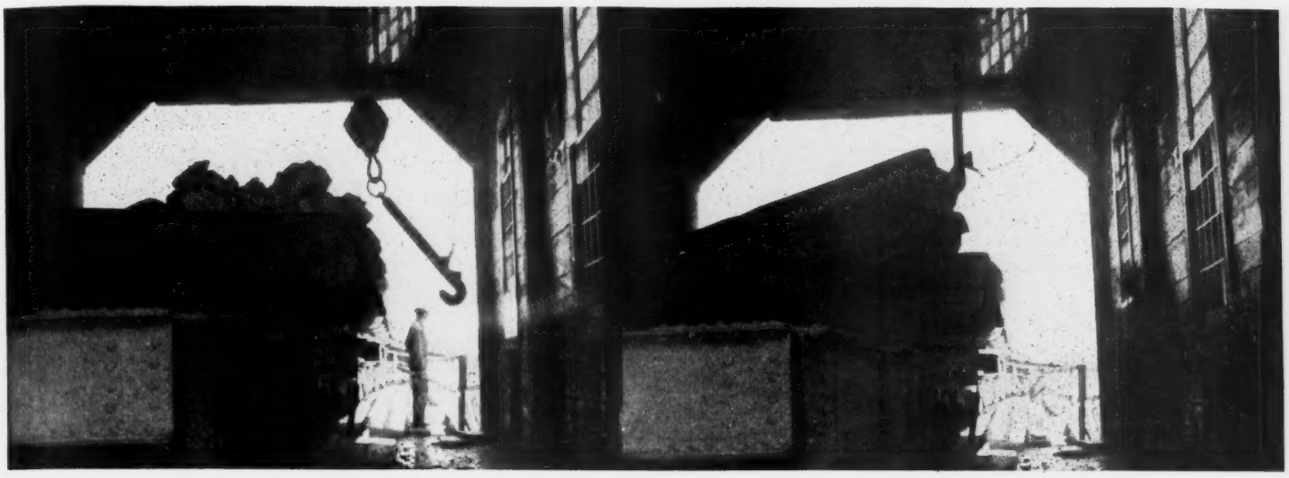
Short bucket elevator feeding secondary crusher (left) from the primary jaw crusher (right)



View of the steel hopper and chute from elevator feeding secondary Fairmount slugger-roll crusher

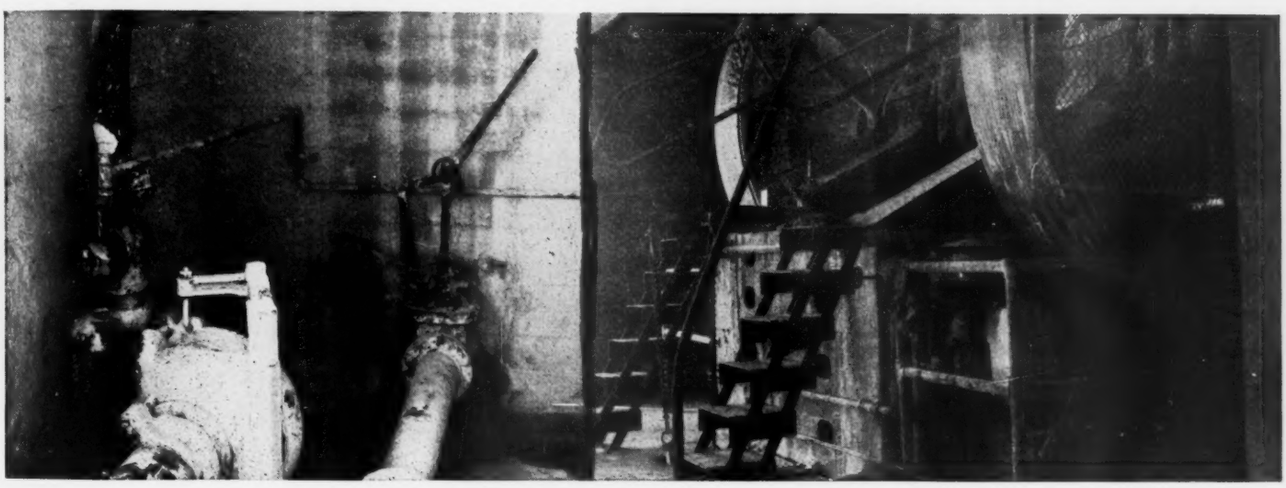


Grizzly feeder taking stone from crushers above and feeding oversize to Williams Jumbo hammer mill



Showing how the automatic grappling hook works

Another view of the hook in operation



Special slurry pump and control valve

Big jaw crusher rigged for convenience and safety

Slurry mill feed with water pipe connection to screw shaft to keep the materials moving and avoid excessive wear

Screw of mill feed removed shows how shaft is bored for circulating water and preventing wear on screw

concrete during the last three or four years, and is now one of the show plants of the West Coast.

The crushing plant is one of very few reinforced-concrete crushing plants in the world—probably about as hard service as is required of a structure and of the structural materials of which it is made.

The Superior plant is located in one of the grandest localities in the state of Washington. It manufactures its own electric power from a hydro-electric generating station. In keeping with its magnificent scenic surroundings much has been done to improve the looks as well as the efficiency of the present operation.

An attractive concrete office building and neat, sanitary dwelling houses now adjoin the plant. Both this and the Southwestern plant at Victorville are striking proof that even a portland cement mill need not be an eyesore, but on the contrary may be made a thing of beauty as well as a utility.

Starting at the quarry operating men will find many features of special interest, for the stripping is done by hydraulic methods. There is some real railway construction between the quarry crushing plant and the mill.

A clay pit is located on this same railway. This clay is of such quality that it is necessary to thoroughly wash it for best results and a specially designed piece of apparatus is used for this purpose. This is a large reinforced concrete tank or vat in which the mixture of clay and water is stirred or agitated by plows or rakes attached to rotating arms. This is shown both in the accompanying view and in the detail drawing. This machine was manufactured by the Skagit Steel and Iron Works, Sedro Woolley, Wash., after designs by the engineers of the Superior company. C. L. Wagner is superintendent and engineer in charge of the plant.

Owing to the moist climate of this section the clinker storage is entirely enclosed—a building with clinker capacity for 125,000 bbl. of cement. The plant has five kilns, the largest of which have a daily capacity of 1000 bbl. The kilns vary, according to their age of installation, from 135 to 193 ft. in length and from 8 to 10 ft.

Crushing plant of the Superior Portland Cement Co. plant at Concrete, Wash.—a reinforced-concrete structure

Cement Bids on 100,000-Barrel Job in Washington

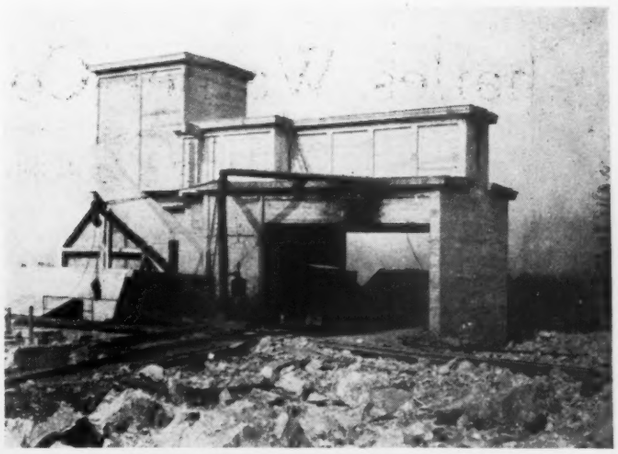
C. S. BARLOW & Sons of Tacoma, Wash., submitted the low bid for the cement which is to go into the huge concrete dam of the Cushman power project of the Tacoma light department. A bid of $3 per barrel for the cement delivered at the job, above Potlatch, was submitted by the local concern for Olympic cement.

The contract at the figure quoted will run to around $300,000, as about 100,000 bbl. of cement are expected to be required.

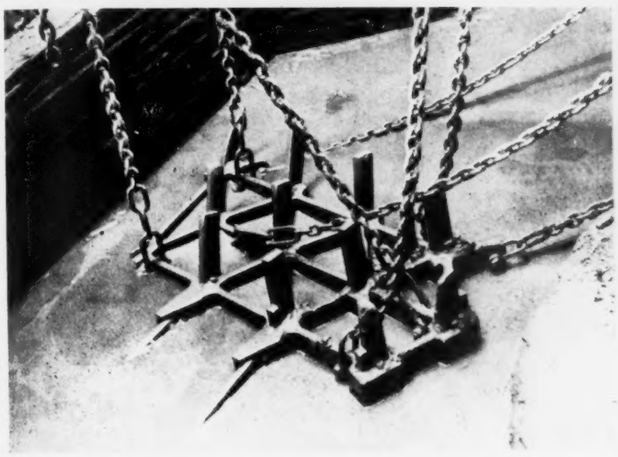
Two other bids for cement were made by the Olympic Cement Co. of Bellingham at $3.05 per barrel, delivered at the dam site; and by the Superior Portland Cement Co. at $3.10 per barrel, delivered.

The C. S. Barlow & Sons propose to use barges to convey cement from Bellingham to Potlatch and there transport it by trucks to the dam site, they announced. This method is to be tried by the local firm, if awarded the contract, in preference to handling the cement by car over the Phoenix Logging

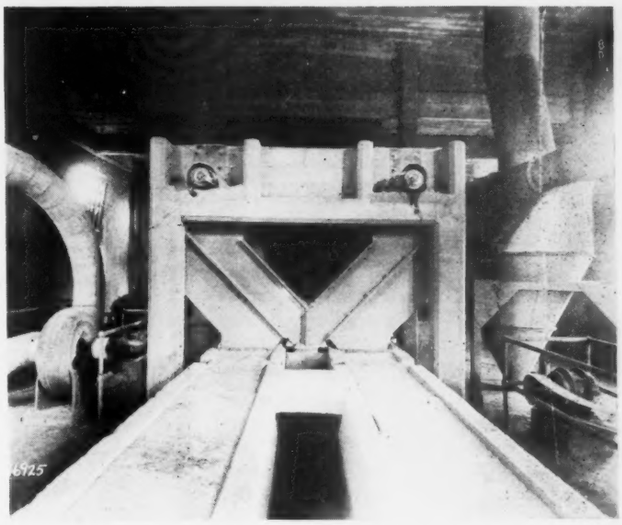
Pretty new office of the Superior Portland Cement Co.



Another view of reinforced-concrete crusher house



Specially designed agitator for clay-washing tank



Duplicate screw conveyors to packing room and dust collectors

Co. railroad to the spur at the dam site.—*Seattle (Wash.) Journal of Commerce.*

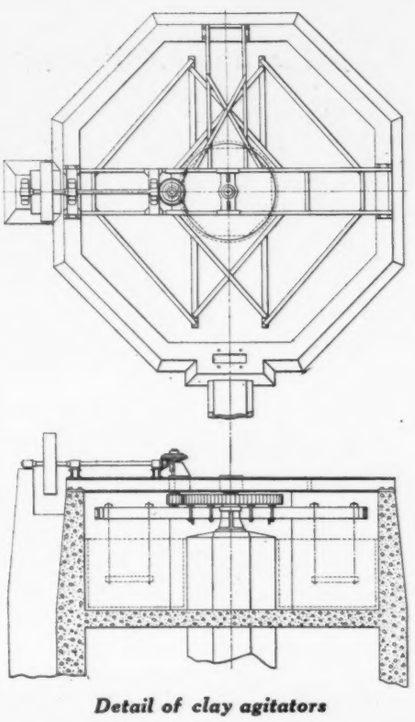
Coast Cement Men Fight Imports

PACIFIC COAST manufacturers of portland cement are awaiting early action by the United States Treasury Department to stop the flood of "dump" cement that is pouring upon the local market, John C. Eden, president of the Superior Portland Cement Co., announced recently upon his return from a trip to California.

The imported cement, being brought in ballast by ships from Belgium and Norway, is being sold here at price approximately 80 cents a barrel below the sale price in countries which produced it, Mr. Eden said.

On the ground that it is being "dumped" upon the market in unfair competition with the local product, the cement manufacturers, Mr. Eden said, are petitioning for an 80-cent duty. Pending final action by the Treasury Department, the cement is being admitted under bond.

Between 65,000 and 70,000 bbl. have already been brought into Seattle, Mr. Eden said, approximately 500,000 bbl. to Los Angeles, 200,000 to San Francisco and 215,000 to Portland since the movement started in November.—*Seattle (Wash.) Post-Intelligencer.*



Detail of clay agitators

Doubling Capacity of Sun Portland Cement Plant

WORK has been started on a second unit of the Sun Portland Cement Co. plant at Lime, near Huntington, Ore., which will increase the output from 1200 to 2400 bbl. each day. The plant was originally constructed to house three such units and it is thought likely the third will be added within the year.

Big Kilns for for Ft. Worth Plant

THE largest cement kiln in the world will be installed at the plant of the Trinity Portland Cement Co., 4½ miles northwest of the city, says a local newspaper.

The kiln at the new Ft. Worth plant will be 250 ft. long and 11 ft. 3 in. in diameter.

For unloading material from cars, the Trinity company will build an electric powered conveyor operated by one man.

Charles Warner Co.'s New Gravel Plant

Novel Plant to Be Built at Tullytown, Pennsylvania

SUPPLEMENTING the news note in ROCK PRODUCTS, April 5, page 66, we have the following official information from the *Warner-American News* of the Charles Warner Co., Wilmington, Del.:

(This is reproduced by special permission of Charles Warner. The editor wished not only to give an authentic announcement in connection with the new plant, but to direct attention to the remarkably frank and cordial relations with his employes and shareholders that the president of this company has established. The *Warner-American News* is a confidential monthly magazine circulated among employes of the Charles Warner Co. and American Lime and Stone Co.)

Statement by Charles Warner, President

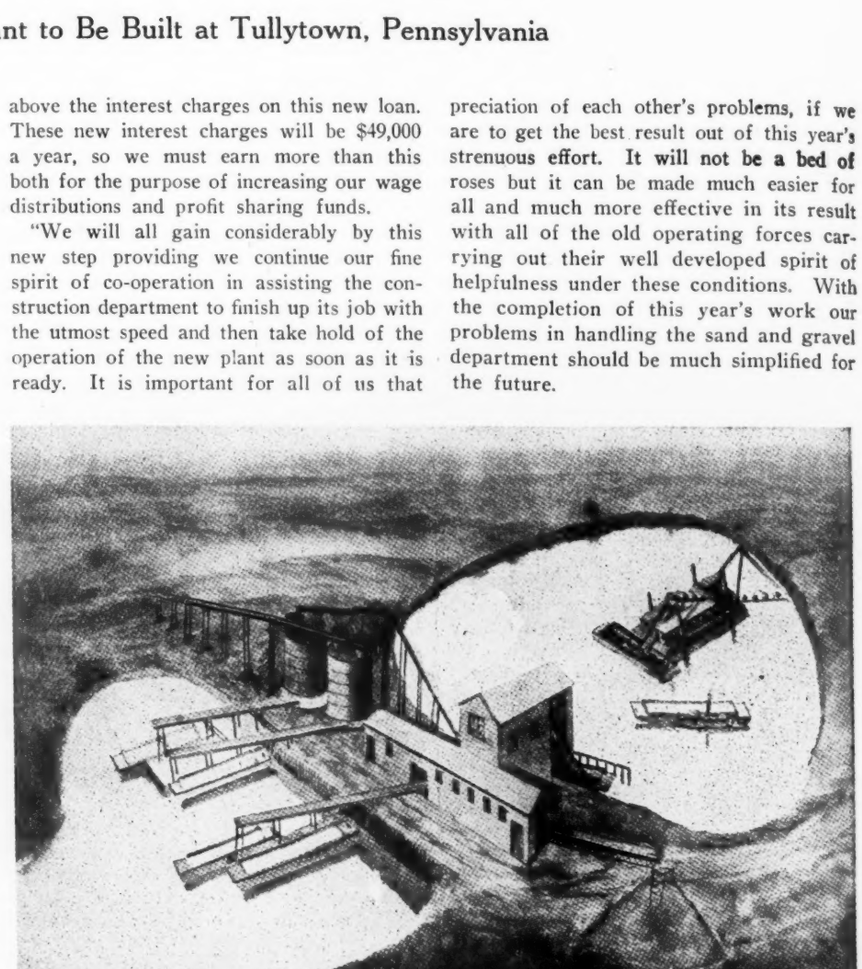
"The Charles Warner Co.'s new plant on the Delaware river north of Tullytown is now assured. The financing has been completed and the construction ordered to proceed on a plant that should have a safe working capacity of 5000 tons per shift of 10 hours. The small commercial development at Manor, which we have been operating as a combined drag line, rail and dredge enterprise, partly to supply needed tonnages and partly to open up the properties so that a large plant could be properly placed, has served its very useful purpose. It must, of course, continue its efforts to the utmost even with further increase in output for this season and until the new plant starts operation.

"Since the new plant to be erected at the water's edge will require much more money than we can safely take out of our working capital, there is only one wise course to pursue, viz., to borrow an adequate sum for a safe period to carry out the large construction program. We have therefore borrowed fo five years approximately $700,000, which should more than cover the cost of the new plant and add somewhat to the working capital necessary to carry the increasing business. We believe it is good business both for the employes and stockholders of the company to borrow this money because the new central plant should be able to make all of our sand and gravel products at one point and make extra grades in addition. We also feel assured of a steady increase in sales which our present plants are not able to take care of, as they are all working to capacity most of the time.

"As a result of these conditions the company should be able to increase its earnings above the interest charges on this new loan. These new interest charges will be $49,000 a year, so we must earn more than this both for the purpose of increasing our wage distributions and profit sharing funds.

"We will all gain considerably by this new step providing we continue our fine spirit of co-operation in assisting the construction department to finish up its job with the utmost speed and then take hold of the operation of the new plant as soon as it is ready. It is important for all of us that the new plant be turned over to the operating department for initial operation on or before October 1 next and all plans are being laid to accomplish this result.

"Since the operating department will have its hands full the construction plans are being arranged so that they will call as little as possible upon the operating officials for assistance. The operating men can best serve the good of all by keeping their operations to maximum so as to hold the customers and the large volume of trade already established until the new plant is ready to take on the production load with greater ease and larger tonnages. Manor will be a very busy spot in the company's history for the next six months with both operation and construction going on in the same locality and it will require a great deal of co-operation and friendly and sympathetic appreciation of each other's problems, if we are to get the best result out of this year's strenuous effort. It will not be a bed of roses but it can be made much easier for all and much more effective in its result with all of the old operating forces carrying out their well developed spirit of helpfulness under these conditions. With the completion of this year's work our problems in handling the sand and gravel department should be much simplified for the future.



The new plant will consist of a new ladder type dredge of large capacity which will discharge into barges. These barges will be towed to the screening and washing plant, and there unloaded. The finished material, after passing through various processes will be loaded on barges and towed to market

"I am leaving a description of the new plant to others.

Description of Plant

By Reed C. Bye

"Authorization for the construction of a new sand and gravel plant on our Manor property having been granted, actual construction will have been started by the time this goes to press, to the end that the plant will be thrown into service as a producing unit, by October 1, 1924.

"This plant will have a capacity in excess of 500 tons per hour of finished materials which will be more than sufficient to replace the tonnage now supplied by our three dredges, when it is desired to abandon river dredging.

"In many ways the design is a novel one, especially to those unfamiliar with

present sand and gravel production methods. A new dredge and three barges will be fabricated in Wilmington and shipped to the Manor property 'knocked-down.' Here they will be assembled on the bank, and launched in a small interior basin, the excavation of which is now under way. When the dredge is launched, this basin will be barely large enough to permit proper maneuvering. Upon starting up the plant, however, dredging at the rate of 600 cu. yd. per hour will very quickly enlarge this basin, until within the next 15 or 20 years, it will have become a large lake, 600 acres or more in area.

"The dredge will excavate the raw material by a continuous bucket elevator, each bucket having a capacity of 16 cu. ft., and will be loaded by gravity chutes into hopper barges of 400 tons capacity. Then the loaded barge will be towed to the washing and screening plant which will be located on a narrow neck of land, between the inner basin and a small harbor dredged into the river bank, from the river channel. To make it clear, the raw material side of the plant is a bulkhead front on the inland lake, while the finished material side is a bulkhead front on the navigable waters of the Delaware river.

"Raw material will be unloaded from the barges by a bucket elevator, a duplicate of the dredge elevator. The material will then follow a gravity course through specially designed scrubbers, crushers, sizing screens, settling tanks and rewashing screens, until it is finally delivered either into stock piles or on barges for transportation to market, in the various grades of sand and gravel demanded by the trade.

"Some idea of the plant and equipment involved in the manufacture of commercial sand and gravel, in addition to the digging and loading equipment (which some people think constitute a gravel plant) may be had by considering that more than 1000 hp. is required for washing and screening alone, while upwards of 7000 gal. of clean water per minute must be pumped to the screens and scrubbers, and the same quantity of dirty water pumped to waste.

"Some idea of the capacity of the plant and what 10,000 tons daily (24 hours) means may be gained from the fact that each day's production at the new plant will be sufficient to fill 2000 5-ton trucks, making a train eight miles long, and not allowing for space between the trucks. On the basis of average barge loads of about 500 tons, the plant will be able to load 20 barges daily and the company's program contemplates a towing service on the basis of an average of about 10 barge loads each 12 hours.

"The plant will cost about $600,000 and will be the largest in this district.

"David S. Bechtel is a new employe in the development and engineering department. His work will be in connection with the design and construction of the marine equipment at the new Tulleytown plant. Mr. Bechtel has had considerable experiences along this line, and was for five years employed by Cornell & Matthews, naval architects."

Success with Oil Burners in California Lime Kilns

Oil Substituted for Pine Wood with 50 Per Cent Saving

By C. W. Shoff

Tyrrell, Trumbull County, Ohio, Formerly Superintendent, Summit Lime Co., Tehachapi, Calif.

I AM pleased to give the readers of Rock Products the result of my experience in the use of oil fuel in lime burning, and to tell some of the reasons why we devised a special system of our own at the Summit Lime Co., Tehachapi, Calif.

It is the desire of every lime manufacturer to produce a "soft" burned, but a thoroughly burned product at a minimum cost. As a result the item of fuel is given considerable attention—particularly at the present time.

The readiness of certain kinds of rock "to take the fire" and not disintegrate in burning naturally has considerable effect on the production as well the size, inside construction, draft and operation of a lime kiln.

However, it is an established fact that the long flame from half-seasoned pine wood will produce a soft-burned, well-burned lime, and that natural gas or producer gas will make a good product if properl applied.

But to produce an equally distributed fire throughout the fire zone of a kiln, and to secure a real blending the steam and oil as it leaves the burner tip, in the form of a gas, at the proper temperatures, is a real problem in getting satisfactory results with oil fuel.

Conditions must be such that the gas formed by the mixture of oil and steam flows steadily into the center of the kiln and does not ignite in the fire box to a greater amount than necessary to produce a proper gas for burning in the interior of the kiln. In other words, we endeavored to accomplish the same results with oil that we had obtained with the pine wood.

In changing from wood to oil we installed a boiler, pressure pump, oil heater, and, in fact, all the ordinarily required equipment for handling oil fuel. We tried out a large number of oil burners, made both by ourselves, and commercial burners with the assistance of their manufacturers' representatives.

We met with no difficulty in finding a burner that worked successfully under a boiler, but we did have a lot of trouble finding, or developing, a burner that would produce the results we expected for burning lime.

As a result of considerable experimental work a special burner and generating system were devised, in which both the water vapor and oil are carried into the kiln with equal pressure. The oil fuel is heated and the steam generated by the lime kiln itself from heat in the ash pit and fire box, thereby providing an independent heating and fuel-feeding system for each kiln.

To avoid condensation of the steam necessary provisions were made to confine the steam as it traveled through the burner, especially that portion of the burner which is outside the fire box.

The burner itself is constructed with a double-way, swing joint, which permits the kiln operator, or tender, to keep it in any desired position, or distance from the rock in the kiln, to swing it entirely free of the fire box, or to move it to one side when drawing the kiln, which gives free access in punching or barring the kiln during the drawing process.

The oil feed is controlled by means of globe valves on steam line and needle values on the oil line. These regulate the character and intensity of the flame; but experience proved that very little steam was required when the desired temperature of the kiln was held, except just after the draw period.

The burner tip was held about 30 in. from the stone, and the fuel flowed in a steady, even stream with only sufficient combustion taking place in the fire box to meet the demands of the oil-vapor-generating system.

A 20-22 gravity oil of asphaltic base was used. The rock is of a crystalline nature which has a decided tendency to crumble or disintegrate in the kiln.

The kilns were only 9 and 10 ft. in diameter, with an inside measurement at the eyes of 4 ft. 6 in. between the fires, and 5 ft. 6 in. in the opposite direction. But the production of these kilns was increased 50% over their capacity using wood fuel. On account of the increased production the draw period was changed to every three hours. Also the fuel cost of the oil-burned lime was less than half that wood burned.

The method of oil burning described above is not experimental, for it has been in use a number of years at several plants in California.

A Whirl Through the West

Glimpses of the Industry in Davenport, Des Moines and Omaha

By Charles A. Breskin
Advertising Manager of Rock Products

I HEAR, on good authority, that the Atlas Portland Cement Co. will finish the new plant started by the Western States Portland Cement Co. at Bettendorf, near Davenport. (The Atlas bought out the Western States company about a year ago)

Tuesday I obtained some corking good photographs and dope on the new plant of the Capitol City Sand Co. at Des Moines.

The plant our friend Ray is erecting is something entirely brand new. Different from anything I have ever seen. We will have the whole story soon. Unfortunately I wrecked one of my cameras at Ray's plant. Nothing serious, but enough to prevent my taking photos. It's a good thing I had my other kodak with me. I carry two of them now because ever since I've been taking photos for ROCK PRODUCTS hard luck has pursued me.

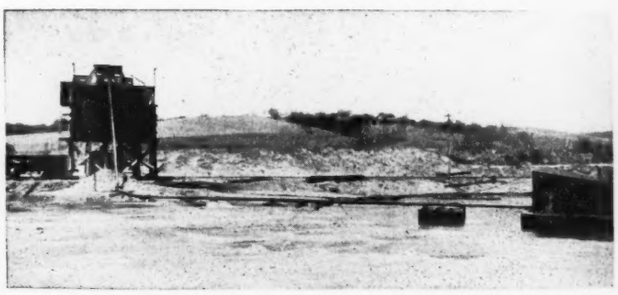
Ray's plant is designed primarily for producing highway gravel. As is common with most plants along the Des Moines river, there is always an excess of sand. Thousands upon thousands of tons are wasted every year. Gravel is scarce. Ray is fortunate in his deposit. Test holes 40 to 50 ft. in depth have indicated over 35% gravel. The deposit contains considerable boulders (size of man's head) and it was necessary to install a crushing plant. The entire plant will be operated by six men—will have a capacity of 1000 tons per day—and will only require a total of 225 hp. Of especial interest is the dragline cableway arrangement and method of screening. Arrangements have been provided so that capacity of the plant can be doubled with but very little expense.

The Capitol City Sand Co. plant is only 1½ miles out of the city and in a direction where the city is growing the fastest. Business is good in Des Moines. While I was there contracts for a half million dollars of paving were let. During March, Des Moines had $556,300 building permits. Everywhere you go you see building going on, both industrial and home.

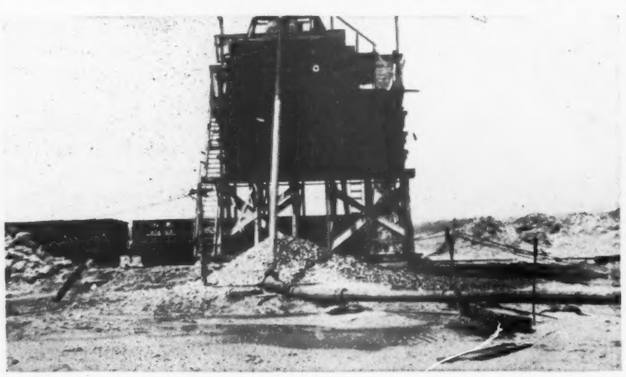
The producers in the Des Moines district anticipate, in the very near future, considerable demand for material for road work. The agitation for good roads and for "Iowa to dig herself out of the mud" keeps growing. When the program does start Iowa will find it necessary to import material from other states. I don't think that the present producers can supply the demand. However, those producers like Mr. Ray who have courage enough to support their convictions are in for good times.

Another thing of interest in Iowa was the proposed tax on all sand and gravel taken out of Iowa rivers. The producers fought this tooth and nail and succeeded in getting some relief on this measure. No tax will be placed on sand and gravel that will be used for public work. And I have it on good authority that most of the production of Iowa right now goes for public work. Therefore this tax measure doesn't mean so much.

From Des Moines I went to Omaha and spent two days with Tom Sullivan of the



Left: Lyman-Richey Sand Co. pits along the Platte river half way between Omaha and Lincoln. Note the large lakes that have been created. Right: Sand dredge and screening plant. Note the immense piles of waste sand in these backgrounds



Left: View of the screening plant, bin capacity and arrangement for loading cars. The piles of rejections in foreground have accumulated after hundreds of tons have passed through the screens. Right: A close-up of the pile of rejections showing the nature of the material

National Stone Co. I was well repaid, too, because Sullivan certainly has a phenomenal quarry operation.

I obtained some wonderful photographs and enough dope for a feature article. Think of a quarry that in some places has 110 ft. of overburden. Formerly this was removed by hydraulicking and steam shovel. As time went on costs mounted higher and higher and business in the Omaha district slumped off until the plant shut down altogether for a while. In the meantime Tom Sullivan, who is *some live wire* and *as witty an Irishman as ever lived,* made a thorough study of mining methods as applied to quarrying. As a result the company now tunnels for their stone, using the room and pillar methods. The result is a much cleaner stone going to the crusher and a more continuous operation. Costs between quarrying stone and mining stone are not available as yet. The company is just getting started in driving entries.

Business in the Omaha district for limestone producers is improving, although it isn't anything that it should be. The Hugh Murphy Construction Co. quarry near the National quarry is shut down altogether. The Myers Stone Co. quarry, near Weeping Water, I am told is only pulverizing stone for asphalt filler and paint pigment purposes. There are only four or five plants in the Omaha district and half are not operating. This, I am told, is due largely to lack of aggressiveness on the part of the quarry operators and a bad break in freight rates.

The sand and gravel business, on the other hand, is very good. Nebraska is doing considerable road graveling work, although there is not very much industrial or home construction.

On the way to the National quarry at Louisville, Neb., I passed the pits of the Lyman-Richey Sand Co. These are on the Platte river and practically half way between Omaha and Lincoln. Thus the company gets a good freight rate into either of these two towns as well as all points between. Most everything is shipped in hopper bottom cars.

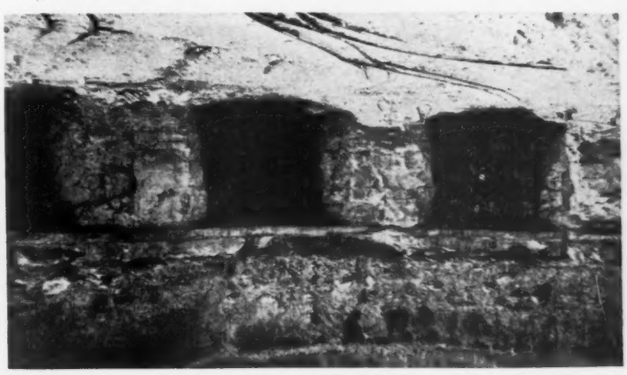
The operations here are much different than those east of the Mississippi river. The gravel is pumped almost exclusively and it's a rare thing to find a dry pit. Another noticeable thing is the scarcity of wayside pits.

The sand companies along the Platte river have very simple operations. Dragline excavators are used to strip a small amount of overburden. Then the centrifugal pumps dredge gravel out from a depth of from 40 to 50 ft. The discharge from the pumps is delivered against an inclined gravity screen (usually set at 45 deg. angle), which takes the oversize out. And there is very little of that, as you can see from one of the accompanying photographs.

The material then goes to another flat screen which removes the excess sand and water that is flumed off to the waste piles. These deposits also have an excess of sand and there are immense waste piles of it. The sand-gravel that is to be sold goes to hopper-bottom bins from which it is spouted direct to cars. These bins have but very little capacity and there is no ground storage. It is a case of delivering direct from pump to the cars. The sand-gravel mixture sold for graveling and concrete work, I am told, has an analysis of practically 98% going through ½-in. screen, 92% through ¼-in. screen and 11% through 28-mesh.

Where the sand and gravel has been taken out there have been created immense lakes. These, I am told, are stocked with bass, but lack of time and proper paraphernalia prevented me from finding out for myself.

I also saw the pit of the Western Sand and Gravel Co. at South Bend, Neb. This operations here are similar to the Lyman-Richey operation. There was one thing of interest, however, the company had just succeeded in raising a sand dredge, with a 15-in. pump on it, that had sunk seven months ago. The dredge is being completely overhauled and will be put in operation very shortly. The thing of interest is that a Lincoln motor that ran the 15-in. pump, after being submerged in water for seven months, was tested out and ran perfectly. It is being installed without any repair work having to be done on it.



Left: National Stone Co. quarry. This view shows something of the deposit and overburden. The stone is only 24 ft. thick and the overburden in some places is more than 100 ft. Right: Tunnel entrances to quarry, which is mined by room and pillar method, also showing character of the limestone formation

Left: Plant of National Stone Co., Louisville, Neb., with the Platte river beyond. Right: Office of Hugh Murphy Construction Co. at Louisville, made of stone from their own quarry. The quarry is in the background

National Crushed Stone President Is a Busy Man

THE editor can say with authority that John J. Sloan, president of the National Crushed Stone Association, is working on plans for developing the association and the industry it represents that will make history. However, he has other cares, and work and troubles, as the item below from the Chicago *Daily News* of April 24, 1924, shows:

SLOAN WARNED OF PERIL

Letter and Phone Calls Threaten Life of City Official

Blame Placed on Controversy Over Sewer Basin Material

Mrs. John J. Sloan, wife of the president of the board of local improvements, has been warned that unless she "calls off her husband" he will be "bumped off."

Mrs. Sloan, who has been in ill health for nearly 20 years, has just returned from Florida. Her greeting was an anonymous letter signed "A friend" and warning her that her husband's life is in danger. Personal telephone calls making similar threats have supplemented the letter.

Shadowed, Sloan Says

"I'll see them all in h——first," said Mr. Sloan recently. "I know that I am being followed every moment of the day, to lunch, to my office, everywhere. I went walking with my 3-year-old grandson Sunday and two detectives followed me, sneaking along, hoping to get something on me. But I will not sell out the city and I will not recede."

Mr. Sloan attributes the entire series of threats and shadowings to his decision that catch basins in sewers should be constructed of concrete instead of brick, as has been the case for more than 15 years.

The most recent development of the conflict that this announcement brought about between the bricklayers' union and the board of local improvements has been the halting of work on $7,000,000 worth of street improvements through a "lockout" by Mr. Sloan of 200 sewer diggers, members of the excavators' union.

Bricklayers Behind Strike

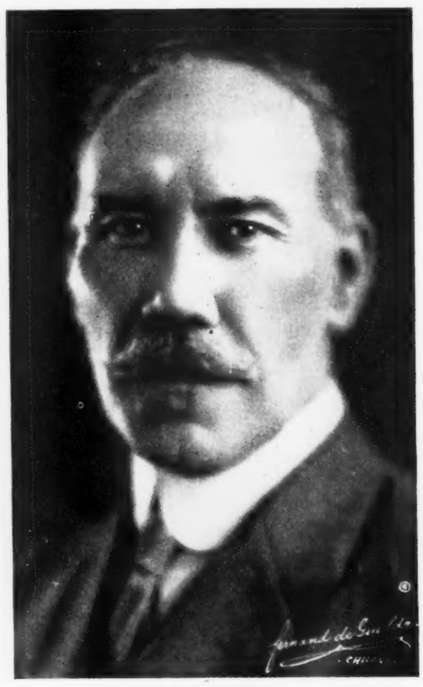
President Sloan's action was taken late yesterday when he learned that the laborers had quit work on excavations for sewers in the neighborhood of North avenue between Mason and Marshfield avenues. He sent for Peter Fosco, business agent of the union, and asked why. Fosco said it was because there were no bricklayers employed on the job and admitted that the strike had been called at the request of Peter Shaughnessy, president of the bricklayers' union and also head of the Washington Construction Co.

Some time ago Mr. Sloan announced that the city could construct its sewers and catchbasins of concrete instead of brick and at that time declared that the Washington Construction Co. for years had held a monopoly in the construction of manholes and catchbasins.

Mr. Sloan's order will automatically tie up contracts held by the Washington Construction Co., he declared.

"I am sorry to put these men out of work," said Mr. Sloan, "but I will not tolerate the city being browbeaten and robbed."

President Sloan's many friends in the quarry industry know full well he is not the kind of man to be "browbeaten and robbed" or allow the city to be. He is dealing with a pirate gang that has ridden the city for many a year—a gang



John J. Sloan, President, National Crushed Stone Association

headed by men fully capable of "bumping off" those who stand in their way. Indeed more than one of them has before now been indicted for murder.

Trap Rock in St. Louis Market

PROBABLY few quarrymen know that there exists a deposit of trap rock within a marketable distance of St. Louis, Mo. We generally think of the great Central West—Mississippi Valley—states as being exclusively limestone states. Yet it seems a deposit of porphyry has been known for many years—a deposit worked for many years for iron ore, but now worked for crushed stone.

We are indebted to James Travilla, a well known consulting engineer of St. Louis for the following:

"Knowing your interest in the production of crushed rock, I thought possibly you would be interested in reviewing data regarding Pilot Knob trap rock, produced by the Pilot Knob Ore Co., St. Louis.

"I have been developing the crushed stone business for this company along conservative lines, giving special attention to the gradation of stone and to construction details regarding the use of the stone in the field, in order to try and establish a market for the material on the basis of merit and service and feel that I am meeting with fair success."

A History of Pilot Knob

Pilot Knob trap rock contains about 15% metallic iron, and aside from its distinguishing physical characteristics, toughness, resistance to abrasion and impact as compared with other rocks, is fire and acid-proof, and is non-slippery.

1858. F. Hassendeubel, city engineer, St. Louis, in May, 1858, directed public attention to the merit of Pilot Knob trap rock for surfacing streets. Extracts from official report follow:

"The limestone or rock quarried in the vicinity of St. Louis is better adapted for paving with stone on edge (Telford) than for macadamizing on account of its softness, because the small, broken stones are easily crushed beneath the wheels of heavy vehicles, which is not so much the case with large blocks. As the Iron Mountain railroad is now completed, I would call your attention to a better paving material, which is in abundance at hand near the Pilot Knob. Amongst the stone found about there, the porphyry—trap rock—is remarkable for its extreme hardness.

"The granite though not so hard is far better adapted for paving blocks, because it can easily be dressed to the proper shape. As the using of a better paving material would incur a considerable additional expense, it would depend on the willingness of the property owners fronting on street so to be improved to pay for the same, otherwise it will be advisable to construct only cheap and passable roads, and for that purpose our limestone may be used for years to come."

1876. Robert E. Moore, member Board of Public Works, St. Louis, in March, 1876, read a paper before the University Club of St. Louis and referred to the advantages of available street surfacing material deposits other than limestone.

"The limestone macadam with which 95% of our streets is now paved, grinds up rapidly in spite of all that can be done and streets made of it are of necessity dusty and muddy and short-lived. To get better results we must use more durable materials.

"An abundance of good materials (granite porphyry, trap) lie within easy reach, and if we do not hereafter use them the only thing that can be said for us will be that we have not yet reached that degree of civilization in which intelligence and experience are allowed to govern."

1921. W. W. Horner, chief engineer, Sewers and Paving, St. Louis, in an address before the Missouri State Highway Engineers in 1921, referred to the quality of rock then available for street and road construction as follows:

"The most important feature in the design and construction of bituminous macadam streets and roads is the character and size of the stone.

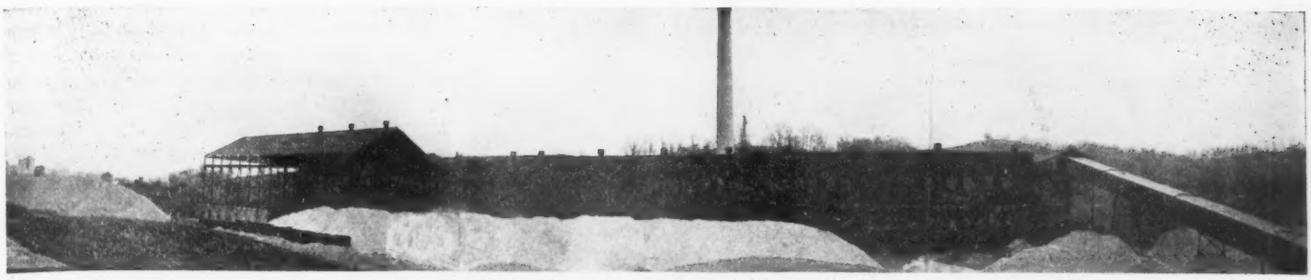
"Most of our limestone is of variable character, much of it running quite soft. Available stone for the purpose, should always be tested for size and for toughness, and only the best stone should be used.

"The limestone in Missouri is softer than is desirable for any type of street or road work, but where it is necessary to use it, it can probably be used to the best advantage in concrete mixtures."

1924. The Pilot Knob Ore Co. appreciating the commercial possibilities in developing a plant for producing crushed trap rock for surfacing streets—roads and floors, is now operating its first unit. Special attention being given to the screening of stone to meet the most exacting specifications and inspection.

Atlas Company to Expand

A SPECIAL meeting of stockholders of the Atlas Portland Cement Co. has been called for May 7 for a vote on a proposal by the directors to increase the authorized common stcok from $25,000,000 to $30,000,000.—*New York City Times.*



This panoramic view showing the whole plant also shows part of the mammoth pile of "screenings" which the new plant will consume

Zanesville's (Ohio) New Cement Plant

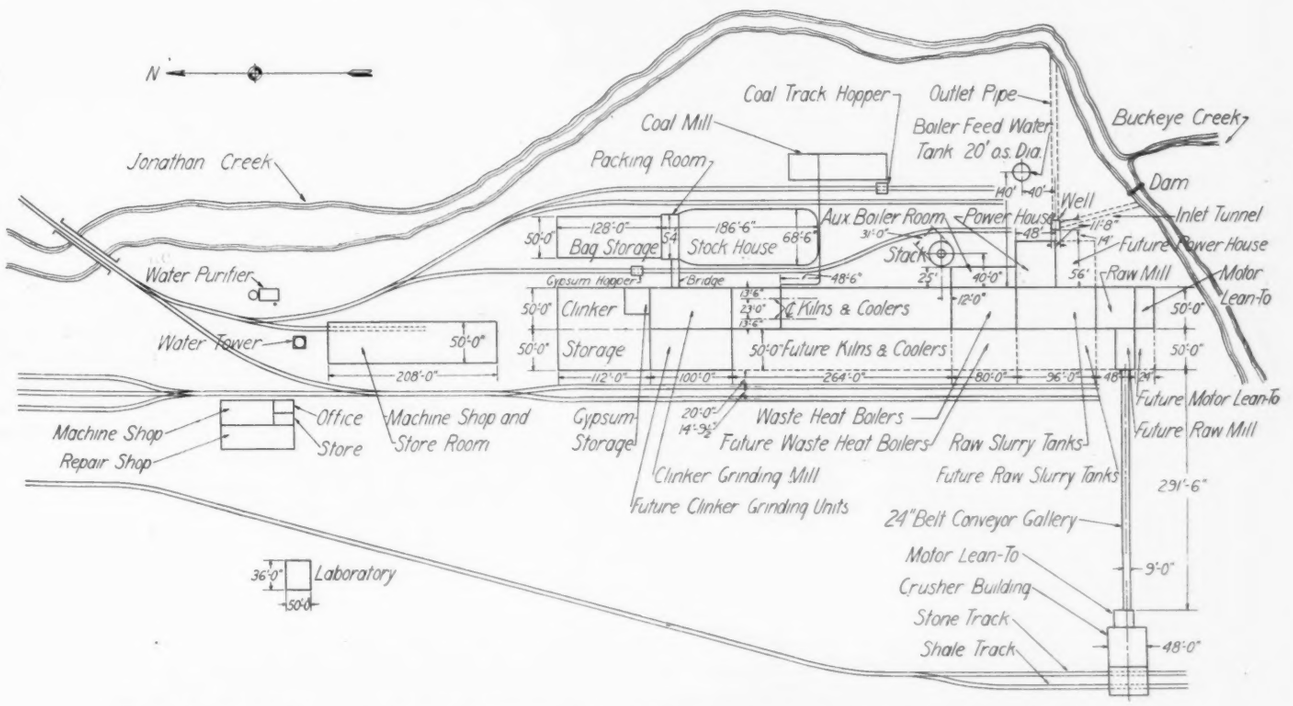
Pittsburgh Plate Glass Company's New 2500-Barrel Wet Process Plant Will Be Ready to Operate in June—Will Be Furnished Limestone from a 250,000-Ton "Screenings" Pile

By George M. Earnshaw
Of Rock Products' Staff

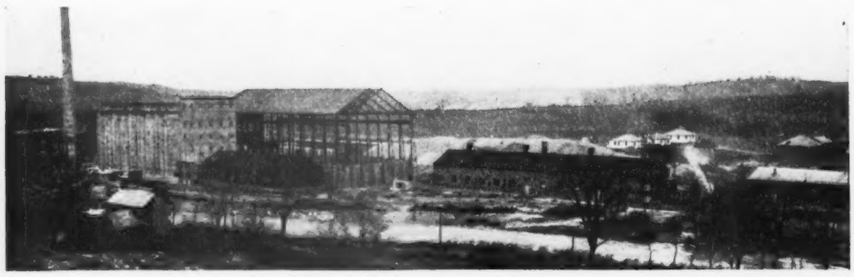
THE Pittsburgh Plate Glass Co. will begin the operation of their new cement plant in June. The plant is rapidly being completed at their quarry site at Fultonham, Ohio, nine miles south of Zanesville.

No doubt many will ask the question of why the Pittsburgh Plate Glass Co. is taking up the manufacture of portland cement, and the answer is, to use up a by-product or waste material from their present large crushing plant. (Incidentally, it was once hoped this waste would be disposed of profitably in the manufacture of agricultural limestone.)

In 1920 this company built and put into operation a 3000-ton crushing plant at Fultonham, to supply limestone for their chemical plant at Barberton, Ohio, where all the soda ash used by the company in the manufacture of glass is manufactured. The chemical plant uses about 60% of the output of the quarry, in a size from 4 to 8 in., leaving all the stone under 4 in. to be recrushed and sold for concrete and highway work. In the crushing of this stone, there is produced from 500 to 600 tons of fine stone running from dust up to ¼-in.



General plan of the operation of the Zanesville portland cement plant of the Pittsburgh Plate Glass Co.



This shows the plant from the opposite side from which the panorama was obtained. The structural steel building in center has since been covered with steel

This includes the fines and dirty stone which is screened out of the first crushing and also from the secondary crushers which crush the 4-in. stone. This 500 to 600 tons of fines and dirty stone is a waste material and has been hauled out and dumped over the spoil bank along with the quarry stripping. So the question arose to find some use for these screenings.

It was found upon investigation that there was a deposit of shale 40 ft. in depth underlying about 40 acres of the company's property, and that the hills across Jonathan Creek had a deposit of shale about 100 ft. in depth, all of which is of the proper analysis for the manufacture of cement. The limestone is high in calcium, averaging 93 to 95%. It contains from 3 to 4% silica, and less than 2% magnesia.

Samples of the limestone and shale were sent to the chemical laboratories of the F. L. Smidth Co. at New York and the Pittsburgh Testing Laboratories at Pittsburgh, Penn. Both of these laboratories pronounced the raw materials ideal for the manufacture of portland cement, and samples of cement made from the samples tested high in every way, giving a cement of maximum strength and hardness, and of a beautiful buff or light gray color.

After these investigations were completed, the company decided that to save this waste of fine stone, it would be a paying proposition to build a 2500-bbl. plant and use all the screenings and dirty stone in the manufacture of cement. Instead of hauling all this waste product out and dumping it, it will be used in the cement plant, and the crushing plant given credit for it. Figuring on 600 tons per day, 300 days per year, 180,000 tons will be required. This will yield a good revenue for the crusher plant and still furnish limestone already crushed for the cement plant, at a figure at least 50% less than the cement plant could quarry and crush stone for.

In October, 1922, it was formally decided to go ahead and build the plant. The crushing department began to dump and store this waste product in an abandoned part of its quarry, with the result that by the time the cement plant is ready to operate in June, there will be in stock ready for the cement plant, more than 250,000 tons of screenings.

The quarry which serves the crushing plant and from which the 250,000 tons of screenings have accumulated. The stripping shovel at the right is the largest made

In drawing up the plans for the plant, several of the latest and most modern plants were visited and data compiled; it was decided to build a 2500-bbl. plant to start with and to make all provisions for the doubling of the output at the least expense and in such a way as to not interrupt the operation of the first unit.

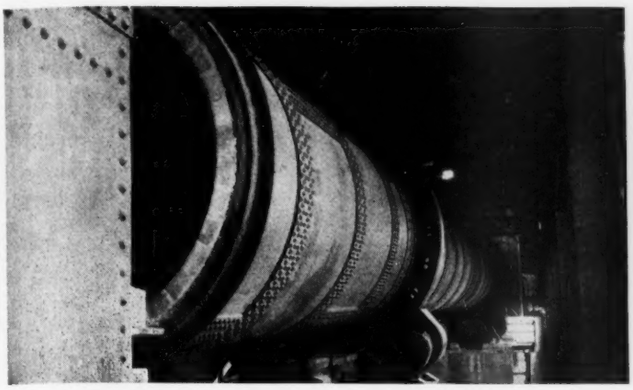
It was also decided to spare no expense to insure the maximum of economy in the manufacture of the product. The result is that waste-heat boilers are installed behind each kiln that will be able to produce all the power necessary to run the cement plant and the present crushing plant. Another advantage the new plant will have, is its proximity to coal for the kilns, as Fultonham is in the center of two veins and coal can be loaded and switched into the plant on a switching charge. Part of the coal will come in on the company's tracks that run to a new quarry it is opening on Buckeye Creek, about 2500 ft. from the cement plant.

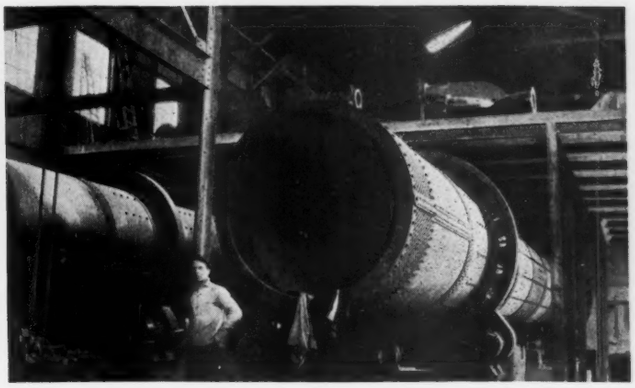
The laboratory and departmental offices. In the background are the crushing and screening plants

The equipment of the plant includes two 10x165-ft. Worthington kilns, two 8x80-ft. Worthington coolers, two 7x26-ft. wet grinding Compeb mills and two 7x26-ft. finishing Compeb mills of Allis-Chalmers Mfg. Co. manufacture. The power house has two 1550-k.w. Allis-Chalmers turbines and generators, running condensing.

The condensers are of the surface type and were manufactured by the C. H. Wheeler Co. The condensing water is supplied by Jonathan Creek which runs through the property, and a concrete dam 5 ft. high diverts the water through an underground tunnel 5x6 ft. in size into a cold well just outside the basement of the power house.

There are four 27½-k.w. exciter sets, three motor-driven and one steam-driven, so that the plant can always be started with the steam-driven set and after the turbines are in operation, two of the motor-driven sets will do all the work. This leaves one motor-driven and one steam-driven set as spare units, to be used in

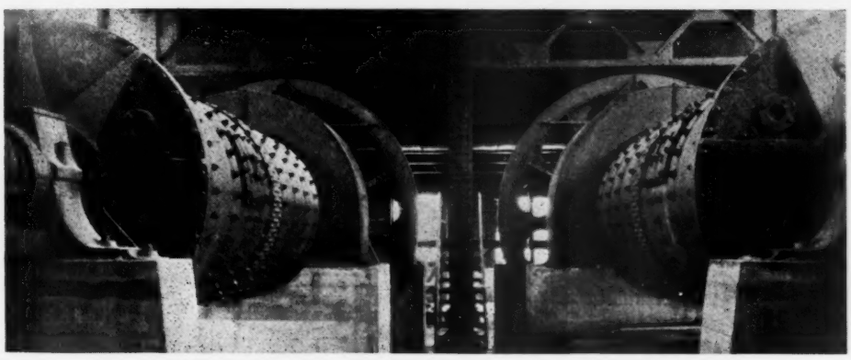




At the left is one of the two 10x165-ft. kilns; at the right are the two coolers. They could be mistaken for kilns

case of accident to either of the motor-driven sets.

The boiler room has two 800-hp. Edge-Moor waste-heat boilers, one at the end of each kiln, and one 400-hp. hand-fired auxiliary boiler to start the plant on, so that as soon as the kilns are in operation the auxiliary boiler can be closed down. These boilers are equipped with Green fuel economizers and Foster superheaters, and are to operate under a 175-lb. pressure and 200-deg. super-heat.



The two raw-grinding Compebs. They are each driven by 500-hp. synchronous motors

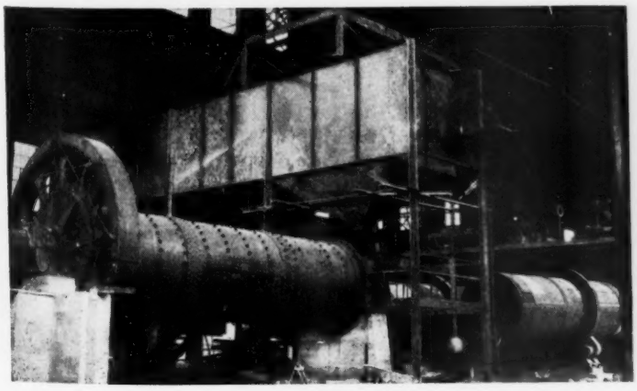
The Compeb mills will be driven by four 500-hp. General Electric synchronous motors, running on 2200 volts alternating current, and connected to the Compeb mills by Cutler-Hammer magnetic clutches. The fans behind the boilers are driven by 100-hp. motors, using 2200 volts. All the other motors throughout the mill are General Electric, and run on 440 volts.

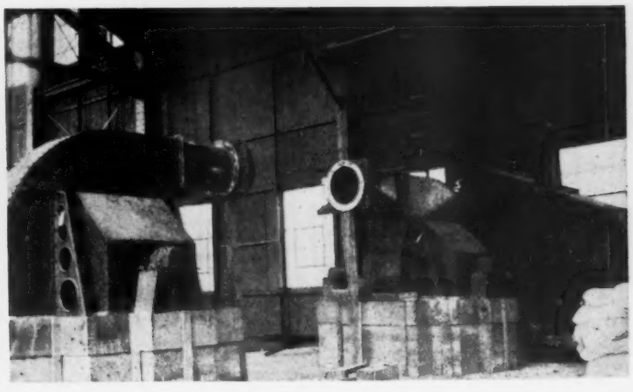
In the basement of the engine room are located the condensers, two boiler feed pumps and two service pumps, and two 350-cu. ft. air compressors; also, three 2200- to 440-volt transformers of 250-k.v.a. capacity each.

The shale and stone will be brought in on a hillside west of the plant, and the shale run through a Pennsylvania swing hammer mill, and reduced to 1 in. and smaller. The shale will be dumped into a 300-ton concrete bin and fed by apron conveyor into the mill. The stone will be dumped into a bin adjacent to the shale bin and fed by an apron conveyor into an elevator. The ground shale and stone bins in the crusher house have a capacity of 500 tons each, and underneath these bins is a double automatic apron conveyor which will feed the shale and stone to a 24-in. Robins belt conveyor of 300-ft. centers which conveys this raw mix up to the large steel storage bins of 500 tons capacity each, from where it is fed by automatic feeders into the raw Compeb mills.

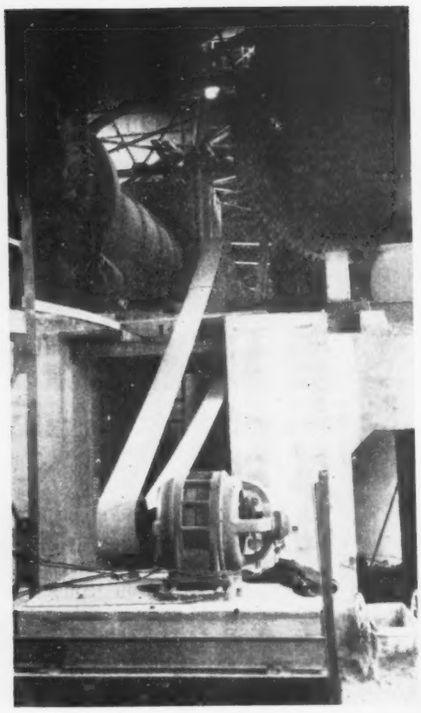
Here the raw materials, which have been mixed in right proportions by the automatic feeder in the crusher house, will be mixed with the right amount of water and ground to the required fineness. This fine ground slurry will discharge into Allis-Chalmers automatic air pumps, which will deliver it into the correcting tanks. There are eight of these circular reinforced-concrete correcting tanks, 23 ft. in diameter and 35 ft. high, each holding 400 tons of slurry.

Here the chemist will take his samples for analysis, and if any correction is needed, the proper amount of lime or shale slurry can be added to bring the analysis to the proper proportions. When the chemist certifies that the mix is correct, it will be pumped by another set of air pumps into two more concrete tanks located underneath the feed end of each kiln,





At the left are the two finish-grinding Compebs, showing the steel tanks above and the ends of the coolers; right, the big No. 12 blowers



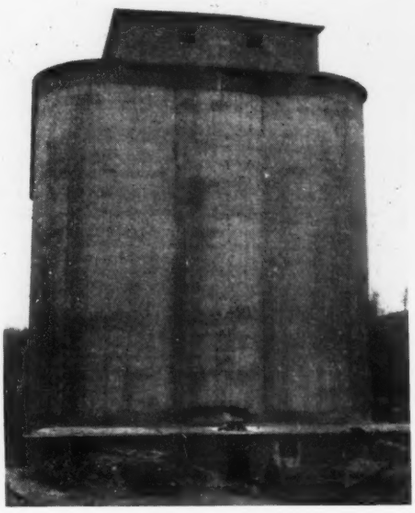
This shows the 50-hp. motor and its belt driving one of the kilns

from where it will be pumped by plunger pumps to the automatic feeders which deliver the slurry to the kilns. These pumps and feeders were manufactured by the F. L. Smidth Co. and are considered the most modern system devised for automatically feeding kilns in any proportion desired.

The kilns will be fired with pulverized coal which will be ground by two 42-in. Fuller-Lehigh mills. The coal, after being ground, will be pumped by the Fuller-Kinyon system to the storage bins in front of the kilns which are equipped with automatic electric controls and indicators which will show the amount of coal in each bin. The kilns are lined in the usual way for the first 40 ft. with 9-in. fire brick and the remainder with 6-in.; they are insulated with 3-in. Sil-o-cel insulating brick.

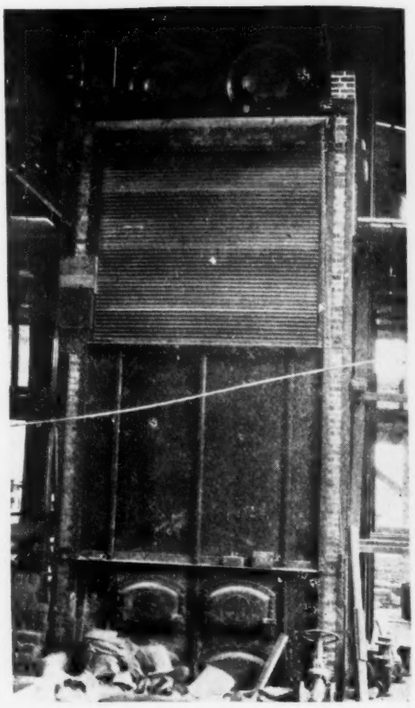
The clinker discharged from the kilns will drop into 8x80-ft. coolers the first 15 ft. of which are lined with hard fire-clay paving blocks, and the balance with cast iron wearing plates, with a 1-in. air space between the plates and the cooler shell. The clinker will then pass from the coolers, cooled down ready to pass up the elevator into steel feed bins over the two Compeb finishing mills. From here it will be fed by feeders into the finishing mills, and the correct amount of gypsum added to give the finished cement the correct set. After the finishing grinding is completed the cement will be discharged into an elevator which takes it up to a conveyor delivering either to the hoppers serving the packers or to the silo storage tanks.

Just beyond the finishing mills is a 44,000-bbl., concrete-lined, storage for



The silos are 33 ft. in diameter and 65 ft. high. There are 10 of them, having a combined capacity of 166,000 bbl.

clinker. It will be served by a 7-ton Alliance Machine Co. electric traveling crane having a 97-ft. span and equipped with a 3½-yd. bucket. The storage is 200 ft. long and the crane operates its full length. In the event of accident to the clinker elevator or one of the finish grinding Compebs, clinker can be put into storage by the crane, thus insuring continuous operation of the kilns. The crane will also be used for unloading and storing gypsum, a space being reserved for this ingredient in one corner of the clinker storage.

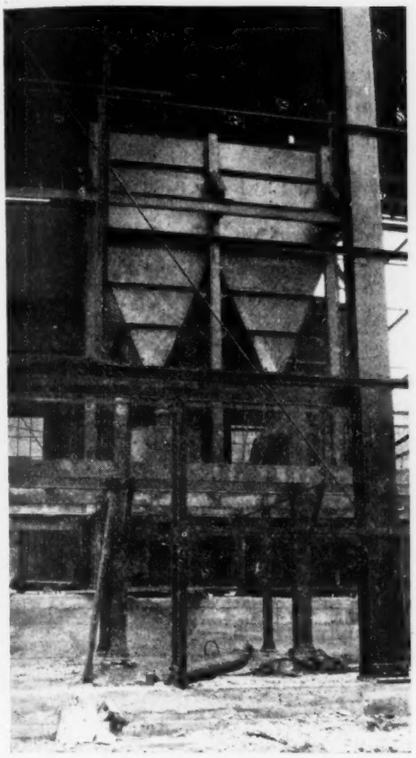


The hand-fired boiler. In addition to this one there are two waste-heat boilers. After the kilns are started this one is shut off

It is interesting to note that from the time the raw materials enter the plant until they are discharged as a finished product from the Compebs, the line of travel has been straight—670 ft. without a turn—under one roof. This is an important feature in economic operation for it makes possible a more accurate and simple control by the operators in all stages of the manufacturing process.

After the cement passes over the bridge to the packing and stock house, it is either bagged direct by two Bates four-tube bagging machines and conveyed by belt conveyors out into the cars, or is conveyed

The company has equipped its machine shop with every piece of equipment necessary for the repair of any machinery in the plant; at the right may be seen a portion of the cases of insulating brick used in the kilns



Here are the two coal-grinding mills and their steel bins

and discharged into any one of the ten concrete storage bins. These are of standard concrete construction with 16 wing and diamond bins and are each 33 ft. in diameter by 65 ft. high. Their combined capacity is 166,000 bbl. There are four tunnels underneath the storage tanks, each having a 16-in. screw conveyor. The conveyors are fed by two F. L. Smidth exbiners. Adjoining the packing room is a large steel building for the cleaning, repairing, sorting and storage of bags.

All Buildings of Concrete or Steel

All the buildings are either of concrete or steel construction, the latter being covered with Robertson corrugated steel. All are fireproof throughout, the stairs, runways and platforms being of steel grating furnished by the Irving Iron Works Co., New York. The storage tanks and clinker storage were constructed by the Spencer Construction Co., Baltimore, Md.

The machine shop is 60x125 ft. and there is a storage room of the same size for storing supplies and duplicate parts of machinery. Between the machine shop and storage room, under the same roof, is located the small stores and office of the stock keeper. The laboratory is of brick construction on the outside and concrete beams and floors inside and provides a well lighted, up-to-date work room, and chief chemist's office. The physical laboratory is located in the basement. All the latest machinery and appliances have been installed to assure accurate control of the mixtures and physical tests.

The company maintains an up-to-date commissary where it houses and boards a large number of its men, an average of 200 meals per day being served at actual cost to the men. Contracts are being let for the erection of a large number of cottages and bungalows for the accommodation of employes. These will be furnished with bath rooms, hot and cold running water, natural gas, electricity and sewer connections, so that the employes will have all the conveniences of the city.

Personnel

The construction of the mill has been in charge of H. A. Henry, who has had many years' experience in the construction and operation of cement plants for the Allis-Chalmers Manufacturing Co., both in this country, Japan and South Africa. He will have charge of the operation of the plant when it is completed. M. C. Foster is the construction engineer; A. E. Hiscox chief chemist; R. W. McAllister, chief engineer in charge of the power house;

This is the man responsible for the plant—F. A. Jones, manager

L. E. Smith, superintendent of the crushing department; N. Griffin is in charge of the quarry, and L. M. Aitkins, an old cement man, is master mechanic. All these men have had years of experience in their respective capacities and are all eager to see the plant begin operations.

The construction of the cement plant is under the personal supervision of F. A. Jones, manager of the Limestone Products Department, who designed and operates the original crushing plant. He will be remembered by many Rock Products readers as the former manager of operations of the Kelley Island Lime and Transport Co. J. C. Buckbee Co., Chicago, were consulting engineers.

The main offices of the Limestone Products and Cement Departments are located in the Memorial building at Zanesville, Ohio, where all the business of these departments is transacted.

The general offices of the Pittsburgh Plate Glass Co. are in the Frick building, Pittsburgh, Penn., with the following officers in charge: Charles W. Brown, president, Pittsburgh; W. L. Clause, chairman of board, Pittsburgh; H. A. Galt, vice-president, Barberton, Ohio; H. S. Wherett, vice-president, Pittsburgh, and Edwin Pitcairn, treasurer.

The cement will be marketed under the trade name "Columbia." The name "Columbia" was taken from the trade mark and name of the Columbia Chemical Division of Barberton which has used this well known name and trade mark on all their products for the last 25 years.

American Slag Cement Plant

WE are reminded by the Birmingham, Ala., *News* that there is a slag cement plant there which has been in continuous and prosperous operation for nearly a quarter of a century. This is the Southern Cement Co. which markets the "Magnolia" brand. The *News* gives the following facts about this plant:

It is located in North Birmingham within the city limits. Constructed in 1900, it is the second oldest cement mill in the South. The oldest is that of the Old Dominion Co., a portland cement plant in Virginia.

The capacity of the Southern Cement Co. is 250,000 bbl., or 1,000,000 sacks, annually, employing 125 men in its production. Everything used in its manufacture is supplied from the Birmingham district. The main raw material, which as a matter of fact is a partly finished product, comes from the big blast furnaces in the district, and for this reason the Southern Cement Co. is an integral part of Birmingham, aside from other considerations.

As said, the raw material is practically a finished product, since it is the slag from the blast furnaces. This slag meets chemical standards during the blast that gives it a uniformity. As it is drawn from the furnace it is subjected to water in its molten state. This breaks it up into a fine mixture which resembles yellow sand or brown sugar. It is again analyzed, then powdered and mixed, according to formula, with the lime.

Magnolia cement is distributed all over the South. Its market extends from Washington, D. C., to Galveston, Texas, and the demand keeps the plant at capacity production.

Harold R. Sanson, president of the Southern Cement Co., sees Birmingham as the natural cement center of the South.

Hints and Helps for Superintendents

Production—Cost Record

THE blank herewith is self-explanatory. It appears to be one of the best the editors have run across, as a basis of a production and cost record. Conditions in Los Angeles are such that producers *have* to know their costs from day to day. They can't afford to wait to the end of the month to see what the material they are selling is costing them.

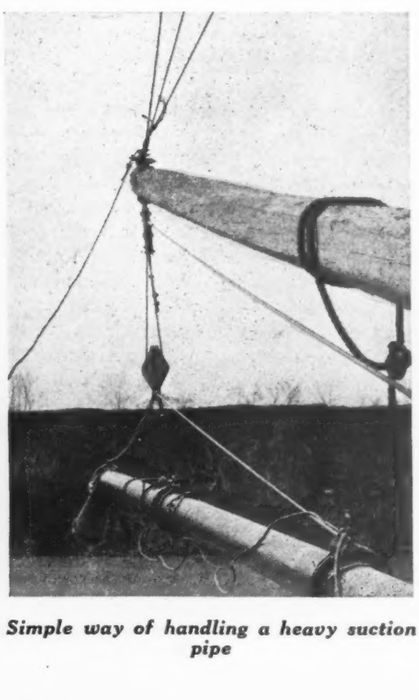
Simple Way of Handling a Heavy Suction Pipe

THE dredge of the Wolf River Sand Co. at Memphis, Tenn., has a 12-in. suction pipe 60 ft. long. To handle such a long and heavy pipe is always something of a problem. At the Ward plant, at Oxford, Mich., such a suction is handled by a steel bridge instead of a boom, the outboard end of the bridge resting on a large pontoon.

The picture shows a very simple and effective method of rigging a lift for such a pipe. A bridle of cable is fastened to the pipe and the lower of a set of blocks is fastened to the bridle. The other block is at the end of the boom.

A little experimenting was needed to show what length of bridle was best and where the block should be placed. It was found that the block ought to be 15 ft. from the end of the pipe and half-way of the bridle rope.

A common method of rigging a lift for a suction pipe is to place two or three blocks at separate points on the pipe and other blocks between them on the boom. The line is rove through these form a "W" when the pipe is horizontal. This method sus-



Simple way of handling a heavy suction pipe

Big Tejunga Rock and Gravel Co., Inc.

DAILY REPORT OF OPERATION

Date.....*192*.....

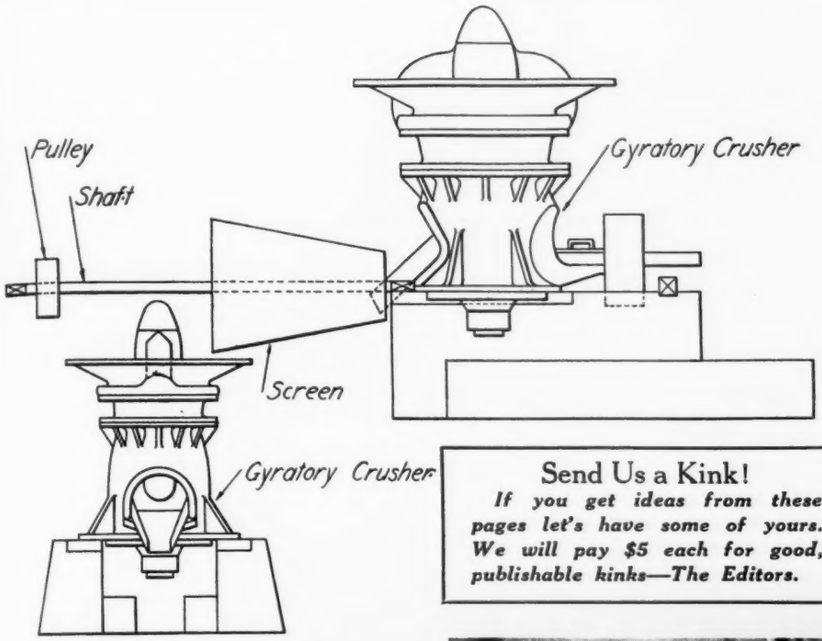
SIZE	TRUCK CU. YDS.	CARS NO.	CARS CU. YDS.	TOTAL	PER CENT
Oversize					
1½ Cr.					
¾ Cr.					
¼ Cr.					
Gravel					
Total Rock					
Sand					
Plaster Sand					
TOTAL					

	FIRST SHIFT	SECOND SHIFT
NO. HOURS RUN		
NO. HOURS DELAY		
NO. DUMP CARS		
NO. YARDS		
NO. YARDS @ HOUR		

PAY ROLL	FIRST SHIFT	SECOND SHIFT
MANAGEMENT AND OFFICE		
GENERAL		
MILL		
HAUL AND DUMP		
SHOVEL		

REMARKS:.....

Full-size reproduction of production record of the Big Tejunga Rock and Gravel Co., Los Angeles, Calif.



Scalping screen between crushers

pends the pipe at several points and keeps it from bending but it takes more power to raise the suction on account of the angles formed by the ropes. The higher the suction is raised the greater these angles become and the more the power that is required.

The system shown here supports the suction at two points, which is enough to keep the pipe from bending. The pull on the ropes is straight in all positions of the pipe so that the power required is always the same.

Tandem Crushers with Screen Between

A RATHER unusual crusher hookup is shown in the accompanying illustrations, which really make any further description superfluous. The sketch, however, is not accurate, for the screen is driven from a pulley on the shaft of the lower crusher, as the view shows.

The screen shaft bearing is provided with a dust-proof cap and is fastened in the discharge opening of the crusher above. The screen shaft is horizontal and the screen conical in shape with its discharge end directly over the lower crusher.

The crushed material discharged by the second crusher goes to the same elevator that receives the material passing the screen, and is elevated to the main sizing screen at the top of the plant.

Obviously this scheme avoids any unnecessary crushing and relieves the secondary crusher. Moreover, it avoids doing all the scalping between crushers at the top of the plant, as is common practice in gravel plants.

This tandem arrangement was devised at the new Greenlawn sand and gravel plant of the Columbus Consumers Supply Co., Columbus, Ohio.

Send Us a Kink!

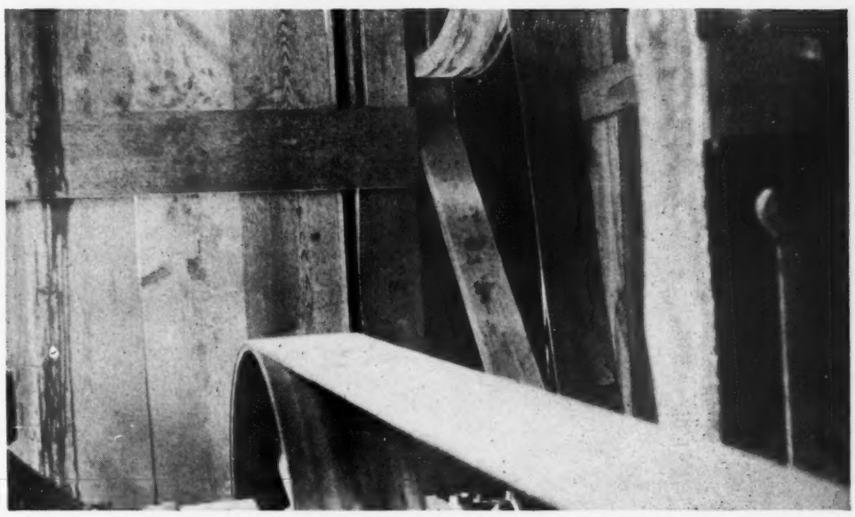
If you get ideas from these pages let's have some of yours. We will pay $5 each for good, publishable kinks—The Editors.

Handling Pontoons Under Traction Wheel Shovel

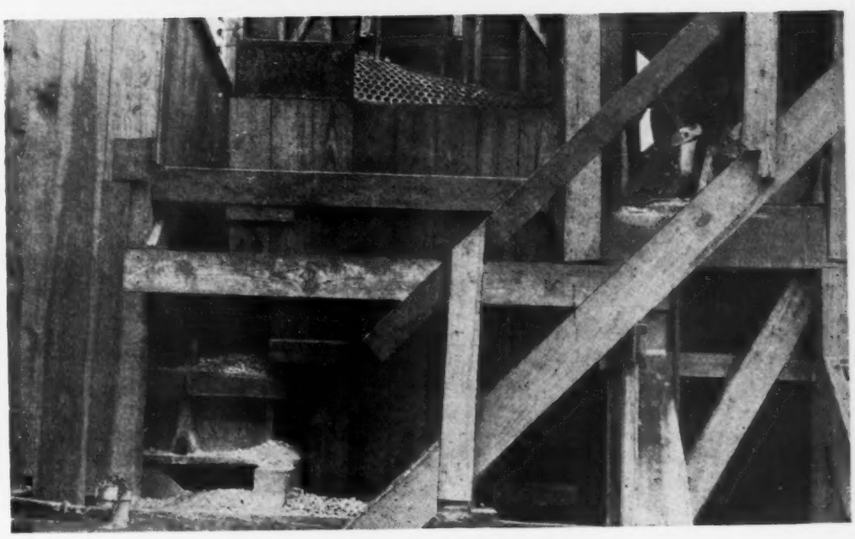
STRYKER & STRYKER on their highway contract in Burlington County, N. J., have devised a method of handling pontoons under their Bucyrus 20-B ¾-yd. shovel mounted on traction wheels, by means of which they have been able to dispense with all pit men.

A 24-in. section of 1-in. chain is bolted to the center of the pontoon under which the dipper teeth are inserted. The pontoon is raised from the rear and placed in front of the shovel without assistance of anyone in the pit. Even the leveling off for this pontoon is done by the shovel before the pontoon is placed.

The runner, Raymond de Graw, is responsible for this kink.



How screen is driven from crusher shaft



Tandem crushers with screen between

Nature, Preparation and Use of Pulverized Coal

Part X—Application of Pulverized Fuel—Earlier Attempts to Burn Pulverized Fuel

By Richard K. Meade
Chemical and Industrial Engineer, Baltimore, Md.

IN the earlier efforts to burn pulverized coal, the powder was usually projected into the furnace by means of a revolving brush. In all of the later installations, however, a current of air of sufficient velocity has been employed to carry the coal into the furnace. This method is unquestionably the most desirable as two ends are attained at the same time—the conveying of the coal into the furnace and the intimate mixing with it of sufficient air for its combustion. Under such conditions the blast of mixed air and coal takes on the nature of a gas and may be handled by methods similar to those employed for gas. The apparatus employed for securing this blast of air and powdered coal is usually called a "burner" and is designed to do two things: Properly proportion, and thoroughly mix the coal and the air.

Practically all of the apparatus employed at the present time is a modification of that originally developed for heating cement kilns. With the introduction of pulverized coal into the metallurgical industries and for steam generation, quite a number of rather ingenuous forms of apparatus were patented, most of which were designed to circumvent imaginary difficulties which presented themselves to the minds of the inventors rather than real ones. It is noteworthy that most of the apparatus now employed by pulverized coal engineers of recognized experience approaches very closely the forms originally employed in the cement industry.

Personally, the writer is inclined to believe that while much attention has been given to the matter of intimately mixing the coal with the air, too little attention has been given to the problem of delivering to the burner pulverized coal at a uniform rate.

Air for Carrying Coal

It will be recalled that theoretically approximately 10 lb. of air are required to burn a pound of coal. This weight of air occupied under ordinary temperature and pressure a volume of 125 cu. ft., while 1 lb. of coal neglecting voids has a volume of less than 0.012 of a cubic foot. It will be seen, therefore, that if this volume of coal is blown into a furnace with at least 25% of the air necessary for combustion (or 34 cu. ft.) that the volumes of coal and air will bear respectively the relation of 1 to 2833.

THIS is a continuation of the very complete and exhaustive treatise on pulverized coal, begun in the June 2, 1923, issue of Rock Products. The last previous installment was in the November 17 issue.

There is, of course, no objection to increasing the air to the full amount required by theory, and indeed this is often done when the volumes will be as 1 to 11,332. It will be seen, therefore, that provided the coal is dry and the particles are not clotted together by moisture, etc., there is ample opportunity for the coal particles to be surrounded with sufficient air to at least cause their ignition. In most furnaces, instantaneous combustion is not only unnecessary but, in fact, is not desired, the only requisite for economy or the desired effect being that the particle of fuel shall be completely consumed in the furnace.

In the early days of powdered coal use, it was the practice with high pressure air (60 lb. or more) to employ about 10% and with low pressure air (6 oz. or more) as low as 25% of the air necessary for complete combustion. Now, however, it is becoming more and more the practice to mix with the coal in the burner a comparatively large percentage of the air necessary for combustion. Manifestly as we approach this condition more rapid combustion will occur.

In some of the earlier installations in the cement industry compressed air was used, while at a few installations a steam jet was employed. The general practice now, however, is to use an ordinary centrifugal fan or pressure blower and operate this under a pressure of from 4 to 10 oz., which gives sufficient velocity to the air in the blast pipe to carry the coal into the furnace. These fans if properly designed and run at the speed required for this pressure give a regular and constant supply of air, under uniform pressure. They are simple in construction and easily kept in repair. They consequently meet all requirements as to air supply.

The problem of supplying a regular stream of coal to the furnace, however, is by no means so simple. Practically all equipment now employed makes use of a worm or helical conveyor feeder and the amount of coal delivered is regulated by the size and speed of the screw or worm. There are objections to this form of feeder but no better device has been offered.

Worm Feeder for Coal

The amount of coal which will be fed out of a bin by a given worm revolving at a given speed under uniform conditions is definite and fixed. Unfortunately, however, these worm feeders do not work under constant conditions. The chief variable influencing the rate of feed is the quality of coal in the bin so that unless the coal is of the same depth in the bin at all times, the quantity of coal delivered by the worm at a given speed is apt to vary.

In practice, however, this feature is not so serious as it sounds because as the quantity of coal in the bin increases or decreases, the attendant has merely to vary the speed of the worm at intervals in order to keep the coal supply constant. The real trouble is to provide against sudden rushes of coal or a marked diminution of the quantity delivered.

Both troubles usually result from the "arching" over of the coal in the hopper part of the bin so that the coal does not flow regularly into the burner. The sudden breaking of the arch due to the weight of the coal above it, or, as often happens, the effort of the furnace attendant to break the arch by hammering on the sides of the bin, will cause a sudden rush of coal into the burner and consequently into the furnace. This difficulty can be eliminated to some extent by proper con-

struction of the feed bins and design of the burner.

The apparatus originally developed in the cement industry is shown in Fig. 27. This arrangement is more or less typical of most modern powdered coal installations also. It consists of a bin in which the pulverized coal is stored, a worm feeder from which it is delivered into an injector through which air is forced by a pressure blower. The injector may be of cast iron, but it was quite common in the cement industry to have them made of galvanized iron by a local tinsmith. The blast pipe leading to the kiln is often also of galvanized iron, in which event it terminates in a nozzle of wrought iron which projects for a foot or more through the hood into the kiln. Lap-welded steel or wrought iron pipe, however, makes a much neater and more permanent job. The worm is operated by means of some form of variable speed control.

The feed bin does not differ materially from other bins except that it should have a hopper bottom and the sides of the latter should be steep. It is always best to have one side perpendicular as shown in the drawing and still better results will be obtained if two sides are perpendicular, as this gives less hold to the toe of the arch. The bin should, of course, be dust-proof. It should be made of steel plate and supported on a light frame of structural steel made without cross pieces. Steel tanks are sometimes used but are less desirable than the hoppered bottomed square bins. Round bins with cone shaped hoppers are also used but the square bins of the type described are to be preferred to these also. As pulverized coal is perfectly dry, no corrosion will occur in these bins from the sulphur in the coal, as happens when steel bins and bunkers are employed in connection with stokers.

The worm feed is usually bolted directly to the bottom of the bin. Steel plates or gates are placed between the bin and the feeder so that the coal can be entirely cut off from the latter. This allows repairs, etc., to be made to the worm without emptying the bin. The worm consists of a helical screw which revolves in a tubular housing. This screw is made of either thin steel plate or cast iron. If the former, it is usually made with flights half the pitch of the standard screw conveyor as this gives a more regular feed and also a greater obstruction to the flow of the coal, which under certain conditions will flow around the shaft of the screw just as would a liquid. It will be noted that the worm and tube extend beyond the bottom of the bin. This is done in order to prevent the coal from flushing or flooding the burner. The tubular housing fits close to the worm for the same reason.

The worm revolves in a casing, which is usually made in several parts and according to the ideas of the maker. The writer makes the hopper part below the bin of plate metal and the tubular part extending beyond the bin of steel or cast iron flanged tubing. The chief points to be taken care of in the design of the casing are: (1) To have the tube fit the worm snugly but at the same time the two should not actually rub. (2) To so arrange the parts that the worm can be drawn out easily for repairs to the flights, etc. (3) To give a rigid support for the end bearing so that the shaft will be kept properly centered and (4) To make all connections dust-proof.

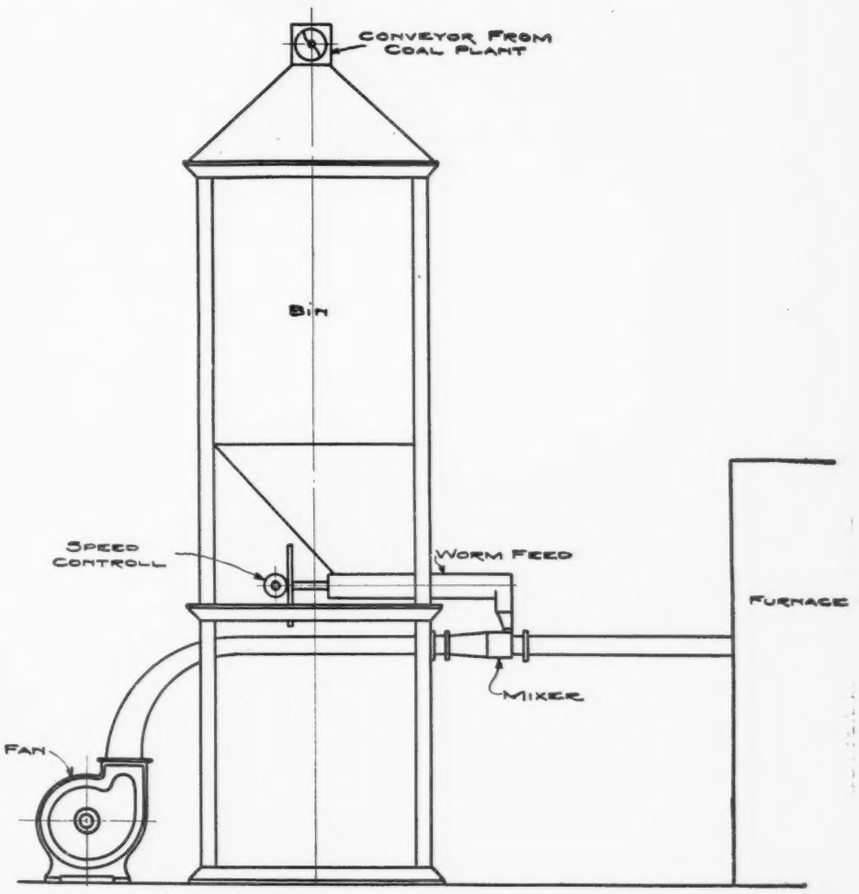


Fig. 27—Apparatus originally developed in the cement industry now typical

The coal fed out of the bin by the worm will depend on the size of the worm, the pitch of its flights and the speed at which it revolves. As I have said, helicoid conveyors used for this purpose are often made one-half of the standard pitch and the sizes generally employed range from 3- to 6-in. conveyors. The capacity of such conveyors is given in Table XV. Liberal allowance should be made from these figures in actual work.

Equipment for Reducing and Varying Speed

The shaft of the worm is usually keyed to the larger one of a pair of bevel gears and the worm is so driven. Another good arrangement is the friction disc and wheel described below. Sometimes a worm gear is used and occasionally a gear and pinion.

The simplest and also the crudest method of varying the speed of the worm is by means of a pair of stepped pulleys connected by a belt such as is employed for altering the speed of machine tools, etc. The objection to such a method is that the fuel control is by steps and intermediate points between those given by the various steps are not possible; whereas furnaces are often susceptible to very slight changes of fuel and one step on the pulley might give too hot a furnace and the next below, one which is too cold. The step pulleys are not now used to any extent and have been superseded by some of the patented forms of speed

TABLE XV. CAPACITY OF WORM COAL FEEDERS MADE FROM STANDARD HELICOID CONVEYORS. WEIGHT OF PULVERIZED COAL TAKEN AS 40 LBS. TO CUBIC FOOT

Diam. of Conveyor	Pitch of Flights*	Diam. of Shaft	Thickness of Flights	Pounds of coal per Revolution	Pounds of coal per hour at 50 RPM.
3 in.	3¼ in.	1-15/16 in.	0.1406 in.	0.30 lbs.	900 lbs.
4 in.	4⅓ in.	1-15/16 in.	0.1875 in.	0.96 lbs.	2,880 lbs.
5 in.	6 in.	2- 7/16 in.	0.250 in.	1.99 lbs.	5,970 lbs.
6 in.	6½ in.	2- 7/16 in.	0.250 in.	3.41 lbs.	10,230 lbs.

*For half pitch flight conveyors, use half the quantities of coal given in the table.

control such as the Reeves, the Mosser, or that made by Moore & White. Another form of speed control which gives good satisfaction is that of the disc and friction pulley.

This latter is more or less of a "home-made" affair and will be described first. It is shown in detail in Fig. 28. It consists of a friction disc which is revolved by means of a friction pulley. The disc is keyed to the worm shaft and the pulley to a counter-shaft driven at constant speed. The surface of the pulley is often covered with rawhide to give greater friction. This pulley is arranged so as to slide back and forth along the shaft, being moved by a screw rotated by a hand or chain wheel, which screw in turn moves a nut connected by a link to a collar on the friction wheel. Manifestly as the wheel is brought nearer to the center of the disc, the latter revolves more rapidly, etc. The pressure between the wheel and disc is kept constant by means of a spring which acts on the worm shaft.

The Reeves, the Mosser and the Moore & White speed controls are all on the market and may be obtained from the makers. When the coal feed is driven from a line shaft, they may be employed to advantage although the friction disc and wheel is simpler and in the writer's opinion is more satisfactory as the belts of the speed controls give trouble.

When motor drives can be employed nothing will answer better, however, than to employ a *variable* speed motor. When these latter are used the plan is to drive the shaft of the feeder by means of either a worm and gear or else to employ some form of gear or worm speed reduction between the motor and the shaft. It is needless to say that gears encased and running in oil are to be preferred to those without casings. A neat arrangement consists of a variable speed motor connected to the feed screw by means of a reliable worm-gear reducer.

The horsepower required to operate the feed is merely nominal. The small sizes can be driven by a 1- or 2-hp. motor and the largest by a 3-hp.

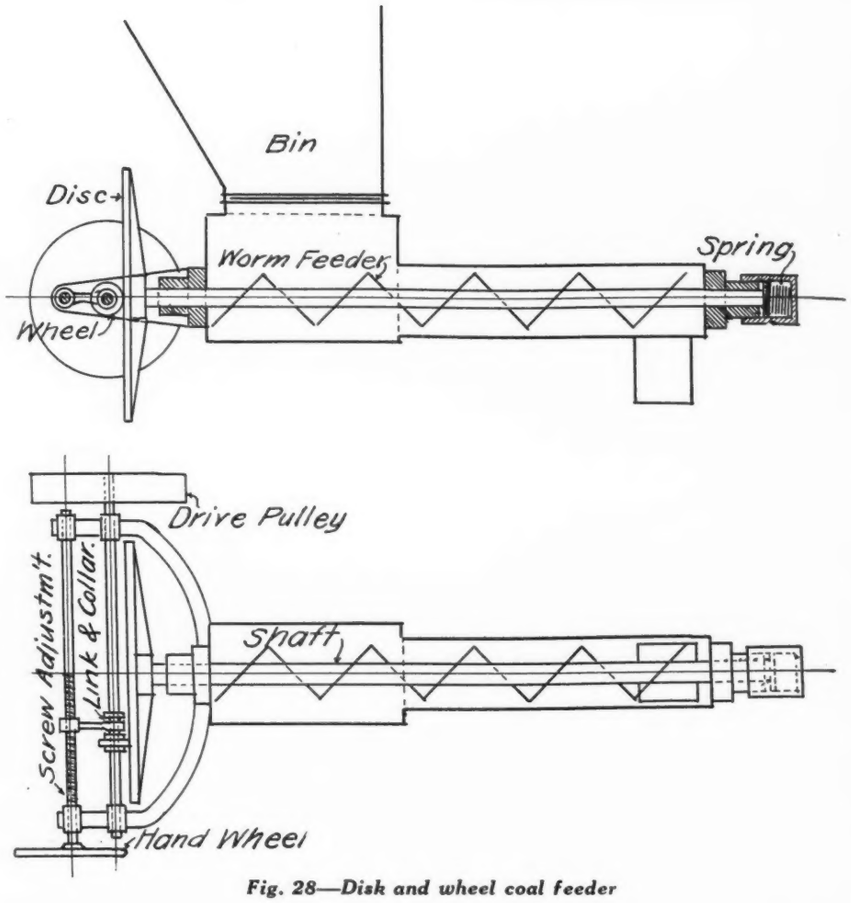


Fig. 28—Disk and wheel coal feeder

Burners

The coal usually drops from the feeder into what is known as the "burner" or injector. This in its simplest form is shown in Fig. 29 and consists of a short cone within a tube. The coal is usually fed into the injector at a point just behind the small end of the cone. The air enters the larger end of the cone and issues in the form of a jet from the smaller end. The sudden expansion of the air as it leaves the jet causes a partial vacuum in the space behind it, with the result that air is sucked into the tube through any openings placed behind the opening of the cone. Usually only a part of the air is blown through the nozzle of the inner cone, the balance is sucked in with the coal. This secondary air can be very readily controlled by means of a shutter or register. The best place to admit this secondary air is where the coal drops down, as this allows the air to mix with the coal and help carry it into the injector.

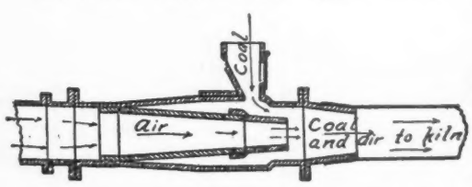


Fig. 29—Simple form of burner for low-pressure air

(To be continued)

Plea of Marquette Cement Company for Through Rate Is Refused

EFFORTS of the Marquette Cement Manufacturing Co., of LaSalle, Ill., to secure a through freight rate on cement shipped from the plant to Davenport, Iowa, stored in the company's new $150,000 warehouse here for a period of time not exceeding six months and reshipped to points in this territory, have again failed, the Interstate Commerce Commission, in a decision handed down on April 26, affirming its original decision refusing the request:

One of the results of the decision is expected to be the virtual abandonment of the new warehouse here, erected last year on the Schmidt road, by the Marquette company. With the commission refusing the request of the company, the only practical use the warehouse can be put to is to store cement for local consumption.

The plea of the Marquette company for a through rate on cement in transit at Davenport was originally heard by the I. C. C. last June at which time, due to the protest of other cement companies and railroads not operating into Davenport, the plea was turned down. On petition of the respondent, the Rock Island railroad, the cement company and local dealers having an interest in the transit case, it was reopened and another hearing granted. Recently, word was received by the traffic bureau of the Davenport Chamber of Commerce, of the commission's affirming of its original decision. Two of the commission of five dissented.

It is said that the effect of the decision of the I. C. C. will be the same as the company paying a local freight rate on cement shipped from LaSalle to Davenport and from Davenport to points west.

No word has been received from the company as to what disposition is to be made of the plant here. Including the site upon which it is located, the warehouse represents an expenditure of around $150,000.—*Davenport Times.*

Committee D-16 on Slate Organized

A TEMPORARY organization of the new Committee D-16 on Slate, American Society for Testing Materials, was effected at a meeting at the Hotel Commodore, New York City, January 21. The organization of the committee has been under consideration for some time and was the immediate outcome of the comprehensive Discussion on Slate held at the annual meeting last June. The tentative personnel is:

Non-Producers.

American Institute of Architects, Le Roy E. Kern.
Farmer, F. M.
General Electric Co., J. A. Capp.
Kessler, D. W.
U. S. Navy Department.
Westinghouse Elec. & Mfg. Co., Dean Harvey.

Producers.

Boyd, D. K.
Coleman, John W.
National Slate Association.
Notvest, Robert.
Stanwood, P. C.
Structural Slate Co., W. A. Kitto.

Invitations have been extended to other individuals and companies to serve on the committee.

The Secretary-Treasurer presided at the organization meeting as the representative of the Executive Committee. The committee deferred the election of permanent officers, requesting the Secretary-Treasurer to continue as temporary chairman and electing Mr. Kessler as temporary secretary.

The first work to be undertaken is the development of standard methods of testing slate, upon which agreement must be had before standard specifications are possible. The various kinds of slate will be considered, including structural, roofing, blackboard and electrical. With respect to electrical slate, arrangements will be made for co-operation with Committee D-9 on Electrical Insulating Materials. The importance of methods of determining absorption led the committee to request Mr. Kessler to present at the next meeting all available data on this subject. It was also voted to ascertain if the National Slate Association will furnish slate for use of the committee in its program of tests.

Simplify Structural Slate

FOLLOWING extended investigation of widespread diversity in specifications covering the use of structural slate for plumbing and sanitary purposes, and tentative adoption by members of the National Slate Association of a simplified program, the Division of Simplified Practice, Department of Commerce, which aided the industry in the movement, has sent to all affected groups requests for acceptances of the eliminations. The new program will become effective January 1, 1925.

Construction items which will be affected include: Laundry tubs, sink and tube combinations, sink and two-tub combinations, sinks with or without integral backs and with one or two drain boards, slate sink tops, slop hoppers, shower stalls, toilet enclosures and urinals.

In addition to the slate association members in the movement, the consuming group was represented by the Structural Service Bureau of Philadelphia, the New York City Board of Education, the Eastern Supply Association, the American Construction Council, the American Institute of Architects, the Division of Simplified Practice, Department of Commerce, the United States Bureau of Standards and the United States Bureau of Mines.

As adopted the simplification items are very nearly a standard of practice. Reductions are made in varieties of width, length and inside depth of sinks and tubs, together with fixed thicknesses for material. Regulations covering the placing of slate in the showers and other sanitary equipment are also included.

A copy of the specifications can be obtained by those interested from the United States Bureau of Standards.

A Record of Continuous Operation in Lime Manufacture

G. and W. H. Corson, Plymouth Meeting, Pennsylvania, Have Quarry and Plant Continuously in Business Since 1837

THERE is probably no company in the lime business at present which can claim such a long and continuous period of manufacturing lime, as the firm of G. & W. H. Corson, Plymouth Meeting, Penn., with the possible exception of the Charles Warner Co. and its predecessors.

In 1837 George Corson and Elias Hicks Corson (great uncle and father, respectively, of the two present members of the firm from whom it derives its name) took up burning lime as a business.

The Corsons have operated several quarries and plants, all of which were located at Corsons, Penn. (near Plymouth Meeting), with the exception of their present plant, which is at Williams Station on Stenton avenue, one and a half miles from the city line of Philadelphia.

The two panoramic views show the quarry, also the plant and kilns. This plant has both Pennsylvania and Philadelphia & Reading railroad sidings.

The stone is a high magnesium limestone and is practically all of a very high quality with low silica content.

The quarry face is about 40 to 45 ft. in height and most of the primary shooting is done with well drill holes. They have an air compressor for running jackhammers for snake and block holing. All the loading of stone is done by hand into 1½-yd. quarry cars. Sledgers work on a tonnage basis and all cars are weighed at foot of incline. The cars are pulled by an electric hoist up to the kilns or to a wharf where stone is dumped into railroad cars.

There are seven kilns, four vertical flame kilns and three draw or pot kilns. Two of the vertical kilns have Arnold and Weigel linings. All of the vertical kilns have steel shells 13 ft. in diameter and large steel coolers.

The coolers on all the kilns are high enough from the ground so that double-gable bottom cars are able to run under them and the lime is drawn directly into the cars. These cars are pulled by an electric hoist to the lump lime storage tanks where an automatic trip dumps the load. Each draw is weighed by track scales and recorded. The lime is fed from the storage tanks on to a belt conveyor, which feeds on to a shaker screen. This screen removes the fines and the lumps go on over to a pan conveyor which conveys them either into trucks or to a Pratt box car loader which throws the lime back into the car. The fines fall from the shaker screen into a pot crusher from which a screen conveyor takes them through a tunnel under the railroad to an elevator. When it is desired to crush lime for hydrating, the perforated sheet in the shaker screen is removed, allowing everything to go into the cooler.

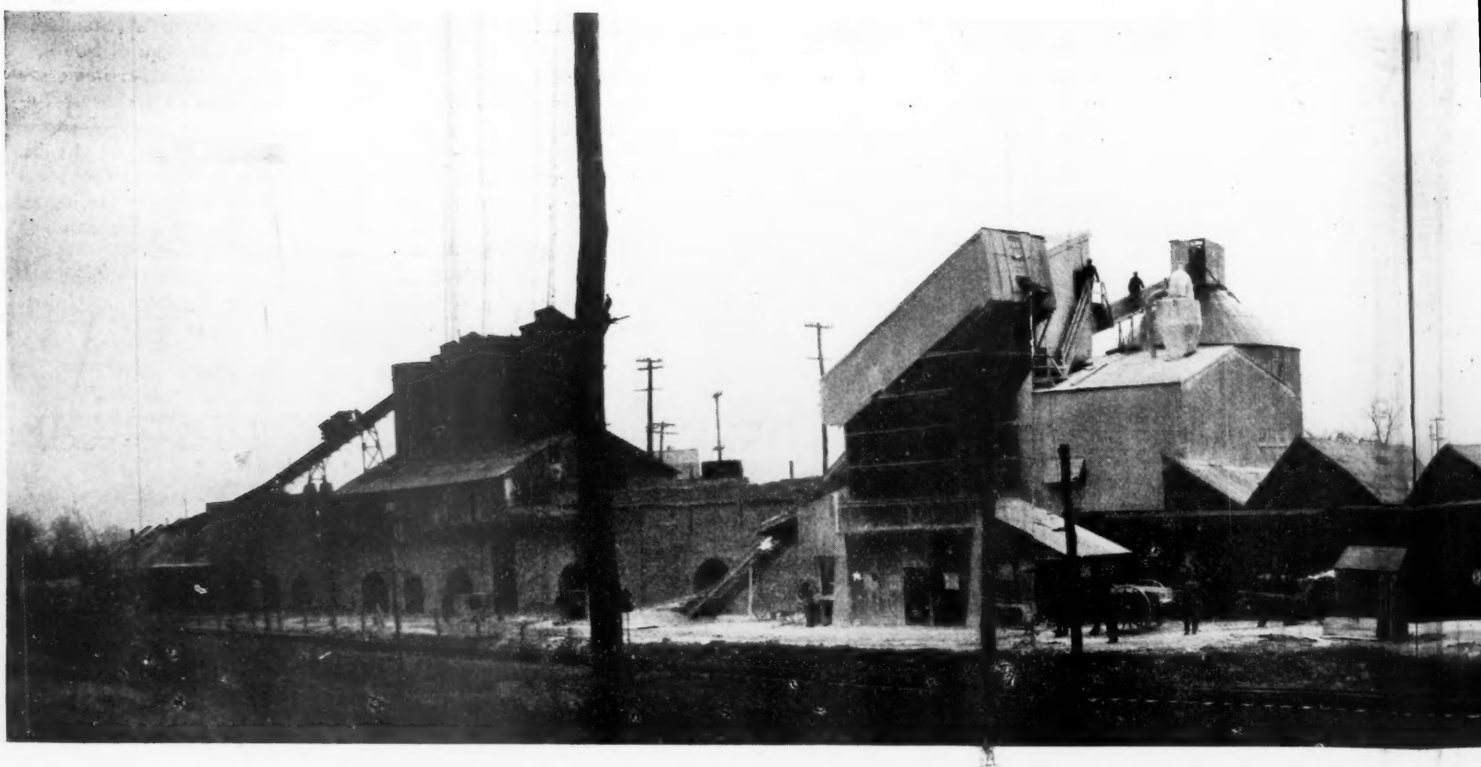
The elevator which runs along the outside of the hydrating building serves a triple purpose. It feeds the 40-ton tank at the top of the hydrating building or fills the concrete storage tank in rear of building by means of a belt conveyor, and also elevates the material when it is reclaimed again from the concrete tank by another belt conveyor which runs in a tunnel beneath the same tank.

The hydrating plant is a standard unit, consisting of a Clyde hydrator, a Raymond pulverizer and air-separation system with tubular dust collectors.

The hydrate is packed by a Bates valve bagger.

There are three large storage buildings for the finished products as well as a large concrete tank in which the crushed quicklime is stored.

Coal is unloaded by an electric portable loader and the whole plant is designed to keep the labor to a minimum.



General view of the lime plant of G. & W. H. Corson, lime manufactu

Quarry of G. & W. H. Corson, Plymouth Meeting, Pennsylvania, believed to be the

, lime manufacturers since 1837, at Plymouth Meeting, Pennsylvania

ed to be the oldest established lime-manufacturing operation in the United States

No Economy in Imported Cement, Says Contractor

OUR friend and subscriber, D. M. Wilcox, vice-president and general manager of the Spartanburg Quarries Corp., Spartansburg, S. C., who is also a well-known contractor, writes us as follows from Tampa, Fla.:

I am enclosing a letter which I have written Mr. Brummer of the *American Contractor,* and I would appreciate very much if it would be possible for you to use this in some way for the betterment of the construction industry, and for the elimination of the use of foreign cement, which is antagonizing some of the larger industries that help us, and whose position we seldom appreciate.

[With the consent of E. J. Brummer, editor of the *American Contractor,* we reproduce the letter herewith.]

In view of renewing acquaintance I wish to get a matter off my mind that has been troubling me somewhat since my stay in Florida the past winter. And in doing so wish to have you pass the subject, as I view it, along to my brother contractors in your celebrated paper, *The American Contractor.*

The subject I wish to discuss is the use of foreign manufactured cement, which to most contractors means nothing, but to all contractors along the Atlantic coast and other points that are reached by foreign vessels make quite an interesting subject to talk about, especially when price is mentioned. Did it ever occur to you or the contractors of America what would become of the construction industry should the American cement mills be closed down and we were to depend on the importing of foreign cement? I believe every contractor that has gone through the 1920 episode of business realizes the importance of delivery and prompt shipments, which I believe every mill in the country today is doing to the very best of its ability to give service and satisfaction. But when it comes to getting any foreign mill to commit itself to a date of shipment and specified delivery date that is a matter that it will not discuss. However, this is a minor detail considering the handling of the barrels and the waste you must charge off for the leakage from burlap bags. If you receive a cargo of 12,000 bbl. and after you have paid the draft and the unloading charges find it does not meet the requirements of the American Society for Testing Materials, what are you then to do? I have heard this was experienced by certain parties in the South and also that they have in their warehouses the same cargo glad to give it way. But who wants it?

The foreign cement importing business is at its peak in Florida at the present time, and you would be surprised at the number of contractors that are grabbing for it. The price is a little less and of course they feel that they are saving money. But when the time comes for another 1920, what American mill will sacrifice their old customers to give these contractors cement? The cement association spends several thousands of dollars in the United States not promoting but educating the people to use more concrete, which in turn is placing business in the hands of every contractor.

Every crushed-stone, gravel and sand produced in the country should help do the same good deeds as the Portland Cement Association. There is one thing that is sure to come, when Europe begins to build and prosper we will get none of her cement. So buy in America, made-in America cement and guard your interests of the future, and help build the construction industry rather than destroy one of the foundations that has kept you in business.

It may sound somewhat radical to some persons reading this, but knowing the working of the cement industry as I do, I sincerely feel sorry for some of the people in the business. It is rumored over the country that a cement trust exists. As I look at it the cement people would be about as hard to combine as would all the contractors of the country. If any have had this experience of being connected with a contractors' association they know it is not possible to get just the ones in one state to be 100% (not meaning to combine) but to get them together to talk over just labor conditions.

Complications in American Manufacture of High Alumina Cements

WE have been informed by competent authority that there is not much prospect of building up an extensive high alumina cement industry in this country because practically all the bauxite deposits are in the hands of the Aluminum Company of America, or its subsidiaries, and the necessary bauxite would have to be imported, or new deposits in inaccessible parts of the far West will have to be discovered and developed. The following letter to the editor of the *Engineering and Mining Journal-Press* (April 19 issue) is additional evidence of the big drawback to the manufacture of this new type cement in the United States:

Sir—The interest that has been aroused by "fused" or "high-alumina" cements brings about an interesting situation with regard to the future supplies of bauxite for this new industry, which from present indications bids fair to assume huge proportions. Statistics show that in 1923 the world's production of bauxite was 641,710 long tons, which was consumed by the aluminum, chemical, abrasive and water-purification industries in the order named. There are practically no reserve stocks, excepting such that each industry usually carries as reserve supply. However, bauxite producers are prepared to increase production within a reasonable time if called upon to do so.

The cement industry has seriously taken up this new product, and today in France production is carried on at the rate of about 1,000,000 bbl. of cement per annum—calculating on the basis of the trade custom of 6 bbl. per ton, this means a little more than 166,000 tons of aluminous cement. In France the demand for this new product today exceeds the production by more than 80%, and preparations are under way in Europe as well as in America for a production to meet this growing demand.

Where will this essential extra supply of bauxite come from? Over 90% of the bauxite deposits now being worked, both domestic and foreign, are controlled by certain interests, and though bauxite deposits are known in nearly all countries, few have a commercial value, as many of the known deposits are of low grade or are so situated geographically that they could not be marketed economically.

Cement production in 1923 amounted to about 200,000,000 bbl., or over 33,000,000 tons, and should the new material meet with the success here that it has abroad, and if in this country the demand for the new material were only 10% of the demand for the ordinary cements, there would be required for the new industry more than 1,750,000 tons of bauxite.

How will bauxite producers be able to meet this demand, and what will happen to prices of bauxite? Conservatively, I am of the opinion that the aluminous cement industry will in the near future be of great importance, and as a result there will be within the next few years an acute shortage of desirable bauxite.

New York. L. HIRSHLER.

Agricultural Gypsum in City Department Stores

LARGELY through the efforts of the Gypsum Industries, Inc., Chicago, the promotional organization of gypsum producers, The Fair, one of Chicago's biggest department stores, has put agricultural gypsum in its regular line of garden accessories and supplies.

Herewith is part of a 2-pp. spread ad-

Special Demonstration—Sixth Floor

Seeds, Bulbs, Shrubbery

PRIVET Very fancy for hedges, Amoor River North. We are headquarters for privet and now have the finest stock that we have ever had. Per 100, $11. Per doz., $1.49

Agriculture Gypsum

The odorless Lawn Fertilizer. This is one of the finest fertilizers to be used for vegetable and flower gardens or lawns. 80 lb. bag. $1.29

Agricultural gypsum in a Chicago department store advertisement

vertisement in the Chicago Sunday *Tribune* in which agricultural gypsum is given special prominence. It is being sold in 80-lb. paper bags, and a considerable demand for it is reported.

The Gypsum Industries, Inc., has been following consistently and persistently for over five years a policy of newspaper publicity as to the value of agricultural gypsum. Backed by relatively very small advertising space in the agricultural press and none at all in the newspaper press, the organization under H. H. Macdonald, secretary, a former newspaper man, has made known agricultural gypsum and its virtues to nearly every one who reads at all. Professor George A. Olson, agronomist of the Gypsum Industries, Inc., is co-operating with agricultural experiment stations in many parts of the country and is winning many friends for gypsum.

Machine That Applies Plaster

A SUCCESSFUL plastering machine may have such a profound effect on certain of the rock products industries, decreasing the use of wall boards and other substitutes and increasing that of lime and gypsum plasters, that the following description will be of interest to ROCK PRODUCTS readers.

The machine is the invention of Albert Oliver, who 21 years ago introduced to the building trades the Clinton system of fireproof building.

The action of the machine is as follows: It traps mortar in batches of 3 lb., forced from the box by a 40-lb. air pressure from an Ingersoll-Rand compressor. Tests have shown that with this device a man and five helpers can distribute as much mixed mortar as from eight to ten skilled plasterers with helpers now distribute in the same length of time. In eight hours' working time the mortar gun will place 550 sq. yd. of scratch coat ⅜ in. thick, or 550 sq. yd. of brown coat or second coat ⅜ in. thick, and about 2000 sq. yd. of stucco dash coat.

The inventor says that the device will make possible the building of walls and partitions without wood studding, and without anything inflammable in either walls or partitions. He goes further in saying that the machine will revolutionize interior construction of buildings and that better, more

Samson mortar gun

healthful, more durable, more sanitary, and more lasting construction will result, and that it will effect greater savings of fuel.

Regarding the probable attitude of labor, Mr. Oliver said, as reported in a prominent trades journal:

"The machine will take the slavery out of the plastering trade, leaving just as much if not more finishing work for the plasterers to do, and making their vocation a more desirable and profitable means of gaining a livelihood.

"I am confident the mortar machine will prove an equal boon to the building industry. It may be slow in taking hold of the method to blow mortar into partitions and ceiling, but the present cost of building will compel its use as an offset and as a measure of economy and labor saving."

Mr. Oliver has supplied ROCK PRODUCTS with the following:

"The Samson 'mortar gun' has been placed on the market for the purposes of reducing the cost of placing quantities of mortar as now used for interior walls, ceilings, and partitions, and for exterior plastering on any background now in general use.

"The average capacity for each gun is about 8 cu. yd. per day of eight hours. This quantity of mortar, placed in various thicknesses, figures as follows:

½	in. in thickness—	5184 sq. ft.—	576 sq. yd.
¾	in. in thickness—	3888 sq. ft.—	432 sq. yd.
1	in. in thickness—	2592 sq. ft.—	288 sq. yd.
1½	in. in thickness—	1944 sq. ft.—	216 sq. yd.
2	in. in thickness—	1296 sq. ft.—	144 sq. yd.
2½	in. in thickness—	1036 sq. ft.—	115 sq. yd.
3	in. in thickness—	864 sq. ft.—	96 sq. yd.

"One man operating the gun and usually five laborers attending is the number required for each gang in placing scratch work. An additional plasterer is required for darbying and straightening up on the brown coat for both interiors and exteriors, but in placing the dash finish on exteriors, the extra man is not required, and two laborers may be dropped from the exterior finishing gang.

"Compressed air is the power used for operating the Samson mortar gun. A compressor furnishing approximately 60 cu. ft. of air per minute is adequate for operating the gun.

"The price of the Samson mortar gun, with 100 ft. of seven-ply plain hose, with couplings is $233."

Los Angeles Blue Diamond Company Expands

WILLIAM C. HAY, president of the Blue Diamond Co., whose recent purchase of a 43-acre site, costing more than $300,000, in the Bandini industrial district-Los Angeles, Calif., aroused general interest, declared recently that the location of the huge site was decided upon after weighing many considerations, important among them being the fact that a $200,000 home building program already is under way in the Bandini Syndicate tract, close by.

"Building material plants must be located as near as possible to the field of intensive building activity," said President Hay in explaining the purchase of this site. "We expect one of the most unprecedented building eras in this district that Los Angeles has ever seen."

Following this policy the Blue Diamond Co. recently purchased a plant site in Burbank, upon which a factory is being developed. The concern handles basic building materials and in seven years has grown from a $15,000 concern to one with an appraised value of $5,000,000. At Corona it has a $1,000,000 rock plant from which 80 carloads of crushed rock are shipped daily.

At the corner of Sixteenth and Alameda streets stands the Blue Diamond Co.'s $4,000,000 gypsum plaster mill and sand and gravel pit. The gypsum deposits of the company are located in Imperial valley and Nevada. Raw materials are brought to Los Angeles for refining and taken as close as possible to the field of activity in carload lots.—Los Angeles *Herald*.

Kansas' Income from Sand Royalties

SINCE Kansas passed its sand royalty law in 1913, a total of $284,787.44 has been distributed to drainage districts and placed in the general revenue fund of the state after paying administration expenses. The statement of revenues was made recently by N. A. Turner, state auditor, following closing of the books of the royalty fund for the calendar year ending March 31.

Of the total revenues $219,139.98 went to the general revenue fund of the state. One-third of the net revenue goes to the local drainage districts. Apportionment of this fund gave $42,868.88 to the Kaw valley drainage district of Kansas City and $12,709.38 to the North Topeka drainage district. Total expenses for administration of the fund were $10,070.20.

During the last calendar year the royalties added $24,885.49 to the general revenue fund of the state and $2634.33 to the Kaw valley drainage district. The fund apportioned to the North Topeka district district for the year was $999.48.

Under the sand royalty act the state exacts a royalty of 6% of the gross return from sand taken from navigable streams in Kansas and sold for use in other than public works. Of the net return one-third goes to the local drainage district.

National Cement Company Bond Offering

ANNOUNCEMENT is made that a public offering of National Cement Co. (Montreal, Que.) 7% bonds will be made simultaneously in Canada and the United States. The American participation has been taken by Morgan, Livermore and Co., members of the New York Stock Exchange, New York, and Pond and Co., bond dealers, Boston. These firms are co-operating in the underwriting with Le Comptoir Financier, Ltd., and Credit-Canada, Ltd., of Montreal.

Stuart Benson, of Morgan, Livermore and Co., and Abbott S. Pond, president of Pond and Co., was in Montreal recently and visited the National Cement Co. plant at Montreal east, now nearing completion. Speaking of their visit and of the forthcoming issue, both visitors expressed themselves as well pleased with the outlook for the success of the enterprise, and the prospects generally.

They were impressed with the character of the new plant, which is the last word in cement-making installation, constructed under the direction of Richard K. Meade, consulting engineer, of Baltimore, Maryland.

Rock Products in the Atlanta District

Big Southern City Is Heavy Consumer of Cement and Aggregate from Nearby and Distant Points

By Edmund Shaw
Editor, Rock Products

ATLANTA is the big aggregate market in the Southeastern states, and it is to this city that a large part of the crushed slag from Birmingham and the gravel from the Montgomery district go. Not much aggregate is produced in the immediate vicinity. The granite plants around Lithonia (25 miles out) and a plant at Stockbridge (18 miles away) supply a small tonnage of crushed stone. The Ladd Lime and Stone Co. at Carterville is perhaps the largest stone producer anywhere near the city and that is almost 50 miles away.

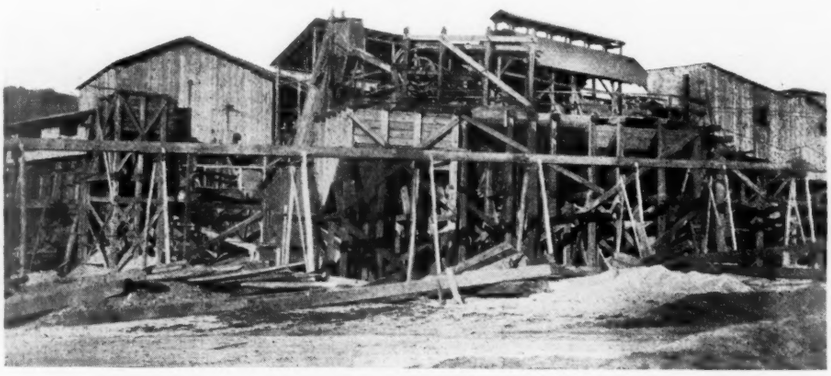
Sand comes not only from the Montgomery district but from Rollo, 96 miles out, where the Atlanta Sand and Supply Co. have an interesting hydraulicking operation. It is sand washing reduced to the last degree of simplicity, since all that is done is to sluice the sand from the bank into cars. While this produces an excellent sand from this particular deposit, it is a method that could not be duplicated in other parts with much success, and this company intends to abandon it and put in sand settling and classifying tanks in the near future, as other parts of the deposit are opened. The Chehaw Sand and Gravel Co. has a simple plant, but more of the conventional type, on the road between Montgomery and Atlanta, and supplies a lot of concrete and mason sand to the Atlanta market.

The sand produced at Rollo has mortar making qualities that are remarkable. Very little of it will remain on a 10-mesh screen and yet it has a modulus of fineness of 2.5. It is for this reason that it uniformly makes a 2000-lb. concrete or better and tests from 160 to 175 of Ottawa standard, according to tests made in the laboratory of the Georgia Polytechnic Institute.

Atlanta Concrete Brick Plant

On this sand as a basis the Atlanta Sand and Supply Co. has put up one of the largest concrete brick plants in the country and is making a very high grade brick of nothing but sand and cement. The plant was not started until hundreds of tests had been made to guarantee the high quality of the product. Experiments showed that cement could be saved by using some coarse aggregate and the strength of the concrete maintained. But the appearance and the uniformity suffered and so the sand and cement mixture was retained. The sale of the brick is increasing rapidly and it is probable that floor tile machines will have to be added to supply a growing demand for concrete tile.

There is one sort of rock product which is shipped from near Atlanta to almost all cities east of the Mississippi and that is paving blocks and curbing. The granite from Lithonia is notable for its working qualities, and the method of opening a quarry is indeed unique. By firing tiny charges of powder (a teacupful or less) at the bottom of a 12-ft. hole and by taking advantage of the sun's heat, by doing this work in the early part of the summer, a cleavage is started in the rock that lifts a gigantic "pancake" of solid granite, perhaps 200 or 300 ft. in diameter and 8 to 12 ft. thick. This is afterwards split into blocks by "plug and feather work" and then worked into curbing and paving stone. The ease and the certainty with which this rock splits is amazing, and yet it is a very hard close grained granite that resists wear and weath-



Barytes washing plant of Thompson, Weinman & Co., Cartersville, Ga.

Concrete brick plant of Atlanta Sand and Supply Co.

ering almost indefinitely, as it must to make paving blocks. Of course much of the apparent ease with which the workmen make these blocks is really due to their skill and knowledge of the stone. Watching an apprentice at work, one notes the difference in a moment. Three companies are operating near Lithonia, the Davidson, the Arabian, and the Pine Mountain.

Cartersville Center of a Rock Products Industry

Cartersville, 48 miles north of Atlanta, might be called the capital of the rock products industries of the South. It is said that more commercial minerals are found here than in any district of its size in the country. It is an important limestone center, producing both burned lime and limestone products. The Thompson & Weinman Co., grind a lot of limestone to whiting, pigment and other fine commercial products. The same firm is also a heavy producer of barytes, both in the ground and crude form, the crude being shipped to other parts of the county to be made into "lithopone." Ochre is produced at two or three plants. Besides these there are "brown ore" iron mines and the relics of what was an important gold mining industry dating back to before California gold was discovered.

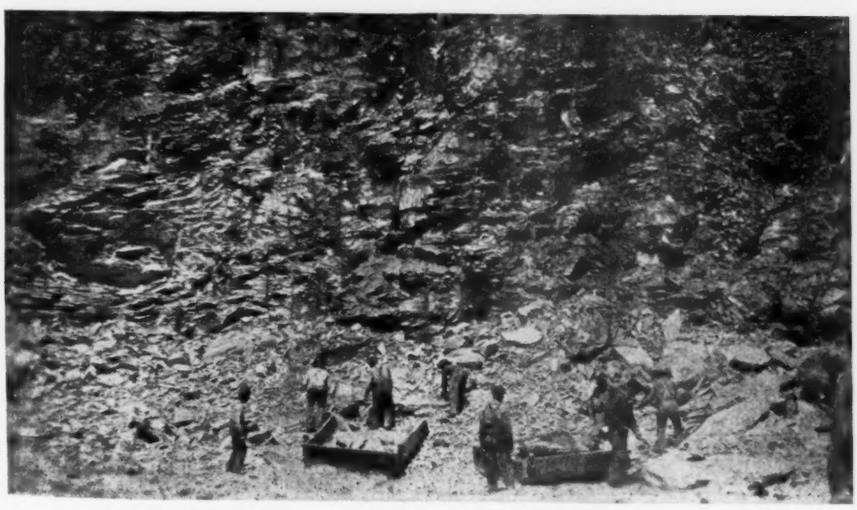
Barytes might be called a "reformed" mineral. For many years it was only used as an adulterant or a substitute, especially for white lead in paint. It is very heavy, having a specific gravity of 4.7, which would make it almost twice as heavy as the ordinary rocks. In recent years it was discovered to have valuable qualities of its own and it now enters into a number of important compositions. Some of it is used to make phonograph records. A lot of it is used in the rubber trade. And its whiteness and covering power has made it a useful pigment, especially for painting walls and fixtures to save light in factories and warehouses.

The process of washing barytes would interest the sand and gravel man if he had any foreign matter such as lignite, clay balls, shale or other "soft rock" to wash out of his bank material. The washing plants have been adapted from the "brown ore" iron ore washeries and the process puts the unwashed material through log washers and jigs. An exceedingly clean product results and the waste from the jigs which the writer saw was entirely free from barytes on the coarse sizes, so far as the eye could judge.

The use of log washers and jigs is slowly making its way in gravel washing. In the first of these letters it was mentioned that the Fischer Lime and Cement Co. is using the process in its new plant at Memphis to remove lignite. It is also used at a plant in Arkansas and another in Virginia. It is more expensive than the ordinary screening and washing process, principally because the plant costs more. But with the demand for gravel what it is and the specifications drawing tighter all the time, one does not have to be much of a prophet to predict a considerable growth of the method in the near future.

The latest and best built of the barytes plants is that of the New Jersey Zinc Co., about a mile out from Cartersville.

Crushing plant of Pine Mountain Granite Co.



Loading pans for aerial tramway at Richardson slate quarry

Big Waste in Slate Granule Manufacturing

Northwest of Cartersville the rocks are shale and slate and at Flex-Rite, about 60 miles from Atlanta, the Richardson Co. has a slate quarry and a plant for making slate granules, which are much used today for roofing and like products. In this industry one encounters one of the real problems of the rock products industry, which is the unavoidable waste in both the quarrying and manufacturing of slate products. This is true not only of making slate granules but of making slate into blackboards and the various structural forms. The waste in making granules may amount to as much as 40%, although the plant is carefully designed to prevent wastage and run with that end in view.

The system of crushing slate that gives the least waste is that of breaking in a series of operations, taking out all the fines after each break. Jaw crushers are used at first and then balanced rolls with vibrating screens. This makes a large plant with many machines, but it is the only method that has been found to reduce slate to granule size without throwing so much of it into dust that the waste would be prohibitive.

The dust is utilized to some extent and research work is going on to develop new uses for it so that in the end the dust may be found to be as valuable as the granules. When this day comes there will be rejoicing in the slate industry.

New Clinchfield Cement Plant

A side trip to Macon found the work on the new plant of the Clinchfield Portland Cement Co. just beginning, with men at work clearing off the plant site and getting ready to put in a side track. A good office building and superintendent's house and

other buildings that will be needed during the construction period have either been erected or are in process of construction.

The plant is at Coreen, about 25 miles out of Macon, a mere siding, now at which only a few local trains stop, but which will be a considerable town when the cement plant gets in operation. The plant will use the wet process and limestone and clay will be the raw materials. Limestone is found on the plant site, and clay will be dug from a large deposit owned by the company about 10 miles distant. This play is said to be high in alumina and of exceptionally good cement making quality.

At Coreen there is also a small plant for grinding phosphate rock which is mined from a local deposit. It is shut down now, but it is expected to start as soon as the price of phosphate rock comes back to normal.

The state of Georgia is to go into the crushed rock business on a large scale and is building a big crusher near Elberton, where it will crush the Oglesby granite. It is said that the plant will have 3000 tons daily capacity. The product of course is to be used on state-aid roads.

Activity of International Cement

THE International Cement Corp. has sold an issue of $2,000,000, 7% cumulative preferred stock to Hayden, Stone & Co., who offer it at 98 and dividend to yield 7.14%.

The International Cement owns six separate companies with seven plants, at Hudson, N. Y.; Dallas and Houston, Texas; Bonner Springs, Kan.; Cuba, Argentine and Uruguay. It is acquiring an eighth plant at Norfolk, Va.

In four years ended December 31, 1923, net tangible assets have increased by over $7,600,000, while funded debt and bank loans have decreased from over $3,600,000 to nothing.

Preferred stock is followed by common stock now paying $4 per share and selling on the New York Stock Exchange at a price which represents an equity of about $15,000,000.

For the same four years the average consolidated net earnings, after deducing depreciation, interest and all taxes, were 7.37 times the annual dividends on the entire issue of preferred stock and for the year 1923 were about ten times such dividends.

The International Cement Corp. for year ended December 31, 1923, shows net income of $2,422,577 after taxes, depreciation, depletion and other charges, equivalent after preferred dividends to $6.37 a share earned on outstanding 364,164 shares of no par common stock. This compares with $1,425,-047, or $4.06 a share on 324,047 shares of common in 1922. After dividends surplus was $1,154,688 against $467,398 in previous year.—*New York City, Wall Street Journal.*

Acquires Norfolk Plant

It is understood that the International Cement Co. has acquired the property of the Giant Portland Cement Co., located at Norfolk, Va. This property has been idle for a period of seven years, and has never proven a profitable part of the Giant company operations. The transaction is understood to have been for cash, and that the International proposes to spend a large sum of money for rehabilitation of the plant. This property has been practically a liability instead of an asset to the Giant company, and its sale will be of material advantage in the saving of carrying charges, and in addition will place in the Giant company treasury a considerable cash item—*Philadelphia (Penn.) Inquirer.*

Consolidated Balance Sheet of International Cement Corp. and Subsidiary Companies as of December 31, 1923

ASSETS

	1923	1922	1921	1920
*Plant, equipment, etc.	$12,660,823	$11.523,615	$11,803,709	$9,142,857
Cash	963,666	423,008	245,007	474,533
Time deposits				447,960
Notes receivable	151,858	208,368	33,902	57,035
Accounts receivable	1,164 422	1,124,316	1,255,646	1,091,095
Government securities, etc.	205,825	544,013	20,600	3,100
Emp. subsidiary company stock			612	63,053
Inventories	2,316,319	2,074,991	2,645,315	2,184 572
Deferred charges	157,200	231,804	276,053	181,244
Reserved for loss on exchange, etc.	355,475	183,773	489.875	308,701
Total	$17,264,638	$15,955,342	$15,790,969	$13,336,748

LIABILITIES

Preferred stock	$ 1,468,700	$ 1,490,700		
‡Common stock	11,268,031	9,943,755	$11,497,205	$ 8,072 655
Capital stock subsidiary company	50,854	70,693	77,642	48,946
Mortgage debt subsidiary companies	345,900	281.258	340,801	1,153,040
Gold notes		1,346,500	1,500,000	
Accounts payable	754,482	453,942	537,613	2,659,002
Federal taxes	253,188	131,255	121.905	113,350
Accrued wages, interest, etc.	76,924	37,883	114,138	112,253
Reserves	30,160	84,461	100,247	223,809
Surplus	2,998,399	2.114,895	1,501,418	953,693
Total	$17,264,638	$15,955,342	$15,790,969	$13,336,748

*After depreciation.
‡Represented by 364,167 no par common shares.

Consolidated Profit and Loss Statement for 1923

	1923	1922	1921	1920
Gross sales	$11.289,116	$9,407,725	$9,172,311	$8,461,896
Expense, depreciation and depletion	8,418,948	7,714,096	7,156,391	6,065,925
Profit	$2,870,168	$1,693,629	$2,015 920	$2,395.971
Other income	102,262	168,451	255,206	168,038
Total income	$2,972,430	$1,862,080	$2,271.126	$2,564,009
Interest, tax, etc.	549,853	437,033	741,226	784,450
Net income	$2,422,577	$1,425 047	$1,529,900	$1,779,559
Preferred dividends	103,352	107,016	56,056	
Common dividends	1,164,537	850,633	738,609	335,126
Surplus	$1,154,688	$ 467,398	$ 735.235	$1,444,433
Profit and loss surplus	2,998,399	2,144,894	1,501,418	953,863

Plans of the New England Portland Cement Company

ONE of the largest real estate transactions ever recorded in Knox County, Maine, was registered recently when all of the properties belonging to the New England Portland Cement Co., the Traction Securities Co. and their subsidiary corporations were purchased by the New England Portland Cement and Lime Co., a million dollar corporation, recently organized. Attorneys from New York, Boston and Portland were here in connection with closing the deal.

The corporations formerly owning these large proprties, containing extensive limestone and clay deposits and Rockland shore property and dwellings, were controlled largely by Eugene Meyer, Jr. (now chairman of the War Finance Board), the late John A. Black of New York and Alfred S. Black of this city.

It is understood that Alfred S. Black has a large financial interest with the new owners, who have organized the New England Portlant Cement and Lime Co. To a reporter of the *Courier-Gazette,* Mr. Black said:

"This company has already succeeded in having underwritten and sold $400,000 of bonds. The New York Trust Co. of New York City is trustee. It is the plans of those interested to make the company one of New England's largest industries. The first unit will be the construction of a modern lime plant of approximately 500,000 bbl. annual capacity, to be followed shortly thereafter by the construction of a cement plant of 2000 bbl. a day, or 600,000 bbl. annually, so constructed that its capacity can be easily increased from time to time. The construction of the lime unit will start as soon as the engineers have completed detailed drawings, and is expected to be in operation by early fall. These engineers, of national reputation, have been working on the properties the past several weeks, but with all publicity withheld," added Mr. Black, "the board of directors and personnel of its officers will be announced probably next week, when the company will move into offices in the new Beacon Trust Co. building at 31 Milk street, Boston."—*Rockland (Maine) Courier-Gazette.*

Plans for Lime Convention Promise Record Attendance

Golf and Bridge Whist as Well as Business for Members and Guests of the Lime Industry

THE sixth annual convention of the National Lime Association (It is about the 20th of American lime manufacturers.) will be held at White Sulphur Springs, W. Va., May 20, 21, 22 and 23, as already announced in these columns.

General Manager Ford writes us that the program is rapidly taking shape. The following is more or less tentative:

TUESDAY, MAY 20—In the morning there will be a meeting of the board of directors, which will be followed at 11:30 a. m. by the meeting of the membership, with an opening address by George B. Wood, president, and the report of the general manager. Then will follow the nomination of officers and appointment of committees and an informal discussion "for the good of the association." Luncheon will be at 1:30 each day and the afternoons devoted to golf, tennis, swimming, horseback riding, automobiling and other forms of recreation. At 8:30 p. m. there will be an auction-bridge tournament, open to all in attendance.

WEDNESDAY, MAY 21—In the morning there will be reports of the general activities of the headquarters office, agricultural report by R. C. Towles, construction report by R. P. Brown and chemical report by Dr. G. J. Fink. There will also be a report by L. B. Burt, chemical representative of the central division, entitled "A Recent Survey of the Paper and Pulp Industry in the Southwest." This will be followed by an illustrated talk by R. P. Brown, of the National Lime Association, on "A Visit to Muscle Shoals, Alabama." The slides accompany this talk will show stages of the development of the work at Muscle Shoals, not only with reference to the addition of hydrated lime, but in general, and should be very interesting. At 8 p. m. there will be a research conference. Dr. Fink will be in charge of this, and every indication points to the fact that it will be a well attended round-table meeting of lime technical men. Plant chemists, superintendents, workers on lime subjects in various institutions and all others interested are invited to attend.

THURSDAY, MAY 22—The first two reports Thursday morning will be on "The Present Status of the Lime Plaster Investigation" and "The Lime Building Block Investigations." Dr. Fink and J. E. Underwood, assistant chemical director, will have charge of the first subject, and W. A. Freret and J. W. Stockett will handle the second subject. These will be followed by four addresses, which should be most interesting, as follows:

"The Solubility of Commercial Limes," by R.T. Haslam, director, laboratory of applied research, Massachusetts Institute of Technology.

"Lime in the Treatment of Trade Wastes,"

George B. Wood, President, National Lime Association

by James R. Withrow, professor of industrial chemistry, Ohio State University.

"Some New Lime Compounds and Their Possible Significance to the Lime Industry," illustrated, by Dr. W. H. McIntire, head, department of soil chemistry, University of Tennessee.

"Mining Limestone and the Operation of a Rotary Kiln," by W. R. Phillips, vice-president and general manager, American Lime and Stone Co.

In the evening at 8 p. m. members and guests are invited to a dinner and entertainment at Kate's Mountain Club as guests of the Valve Bag Co. of America.

FRIDAY, MAY 23—There will be a joint session at 10 a. m. of the national and divisional organizations, at which time both division managers, Henry M. Camp, eastern division, and G. B. Arthur, central division, will give talks on appropriate subjects. At 11:30 there will be the annual election of officers and the reports on committees. At 2:30 there will be a meeting of the new board of directors, followed by the finals of the golf tournament and a dinner at 7 p. m., at which will be awarded the various prizes.

The luncheons will be served at 1:30 each day. On Monday a short talk will be given by Howard I. Siegrist, insurance expert. On Tuesday we will hear from C. W. D. Rowe, managing director, The Dunstable Lime Co., Ltd., Peterborough, England. On Thursday, W. E. Emley, assistant division chief, U. S. Bureau of Standards, will make a short address.

Missouri Farmers Solve Limestone Distribution Problem

A COMMITTEE composed of E. M. Alexander, M. B. Powers and Caskie Curtright, representing the Chamber of Commerce, raise the $500 stocks for the lime company in one hour. The company will build a bin on the Wabash tracks, ship in lime and sell it to the farmers at cost, after deducting expenses and 7% interest on stock.

The company will have 20 shares of stock at $25 each, owned by the following: C. R. Noel, The Paris National Bank, Clarence Evans, Penn Brace, G. B. Bassett, O. G. Powers & Sons, L. W. Pelsue, Porter & Kirby, Geo. W. Moss, Chas. E. Smith, L. E. Finnell, Harris & Hedden, Sparks-White Lumber Co., Caskie Curtright, Jackson Brothers, Davis & Seibert, J. R. Phillips, Monroe County *Appeal* and City Coal Co.

E. L. Matteson of the Farm Bureau has given his time and advice in regard to building the bin and the purchase and sale of the lime. The company will at any time submit their books to any farmer, that he may see what the lime costs. J. T. Scobee, a big farmer near Victor, was in town recently and commended the business men on the move and stated he would want large quantities of lime. Many farmers around Paris have been converted to the possibilities of lime and have only been waiting for an available supply that could be hauled out at their convenience.—Paris (Mo.) *Appeal.*

New Texas Lime Manufacturer

THE Texas Calcium Arsenate and Lime Co., Waco, Tex., has established headquarters at 610 Amicable Building, and is preparing to build a large lime and calcium arsenate plant. J. Knox Parr, Jr., it is announced, will have charge of the agricultural lime department.

The plant will be at Excellent, Tex., where the company owns a large deposit of high grade high calcium limestone.

The officers of the company are T. A. Adams, president; George M. Johnson, active vice-president; John L. Spurlin, vice-president; C. P. Shaffer, vice-president; W. V. Hanover, secretary-treasurer. Besides the above J. P. Philp and Paul Garrett are directors.

Lime Production in 1923

ABOUT 4,057,000 short tons of lime, valued at $39,413,000, were sold in the United States (including Hawaii and Porto Rico) in 1923, according to an estimate made in the Department of the Interior, by the Geological Survey, from preliminary reports received from the principal producers. This quantity is more than 11% greater than that sold in 1922, and only slightly less than that sold in 1916, the year of largest recorded production. The average value per ton in 1923 is estimated at $9.70. In 1922 it was $9.14. Of the 42 states and territories that produced lime in 1923, 16 showed a decrease and 26 an increase in output as compared with 1922. Nearly all the states that showed a decrease in 1923 are small producers or larger producers that serve local markets or that supply a demand for special lime products. Ohio retained the position that it reached in 1922 as the leading state in the manufacture of lime. The growth of the industry in Ohio is due chiefly to the increased output of building lime, most of which is hydrated lime. In Pennsylvania, which was formerly the leading state, there has been during the last few years a decided decrease in the output of lime manufactured for use in agriculture, and no corresponding increase in the sale of lime for chemical and structural uses.

The sales of hydrated lime in the United States in 1923 are estimated at 1,206,000 short tons, an increase of 9% over those in 1922 and the largest yet reported. Of the 31 states that reported an output of hydrated lime in 1923 several showed a small decrease, but the increase in such states as Ohio, Pennsylvania, Missouri and Viriginia kept the sales well above 1,000,000 tons, the production in 1922. The estimated value of the hydrated lime sold in 1923 was $11,824,000, an average value of $9.80 a ton. The average value in 1922 was $8.92.

Economic Conditions

The reports to the Survey indicate that about the same number of plants were in operation in 1923 as in 1922. Many improvements were made at plants and kilns in order to reduce the cost of labor to a minimum and to increase efficiency. Wages were high, and at times, especially in the summer, common labor was hard to obtain. The cost of operation was generally higher than in 1922, although coal was more plentiful and somewhat cheaper. The manufacturer that sold lime in barrels found that the increase in the cost of the barrels caused a corresponding increase in the cost of lime per barrel. The demand for lime in 1923 was obviously greater than in 1922, but appeared to vary with local conditions and with the use to be made of the product. The average price in 1923 was higher, but many reports show prices about the same as in 1922, or lower.

Construction Lime

The demand for lime for building enterprises was moderately large during the first part of 1923, but the general curtailment of construction work early in the year soon cut down somewhat the demand for lime. On the whole, however, this branch of the lime industry appeared to be prosperous. The increase in sales in 1923 will probably be about 17%.

Chemical Lime

The demand for chemical lime was steadier throughout the year than that for construction lime, and though some manufacturers of chemical lime reported small sales, the total sales in 1923 will evidently be more than in 1922—possibly 12%. The sales of refractory lime (dead-burned dolomite) amounted to about 395,000 short tons in 1923, as against 348,838 short tons in 1922, an increase of 13% over production in the preceding year.

Agricultural Lime

Although some producers reported a considerable demand for agricultural lime in 1923, reports from the chief producing states, including Pennsylvania, Maryland, Virginia and West Virginia, indicate decreased total sales. The reason given for the decrease in sales is the inability of the farmers to pay the price charged for agricultural lime. Many farmers who burn lime for their own use reported increased output, but the manufacturers of commercial agricultural lime in the same district reported decreased sales. However, the high price of coal, the scarcity of farm labor and high wages kept many farmers from burning lime for themselves or their neighbors.

The accompanying table shows the estimated quantity of hydrated lime and the estimated quantity and value of total lime sold in the principal producing states in 1923. The figures for 1922 are given for comparison.

Virginia Will Store Highway Materials

FOLLOWING the example of many other states Virginia will store highway building materials and makes the following offer to contractors:

The state will pay the freight on shipments of sand, stone, and gravel to be stored for use in times of car shortage and in addition will pay 65% of the value of these materials provided the materials are placed on rights of way and, if located on private property, the owners of the property allow the department access to the materials.

It is understood, according to the proposed agreements, that the contractors will not use the materials in question except for the emergency purposes for which they are stored. It is believed that the plan will greatly facilitate road construction in Virginia, especially as it follows on the heels of the department's policy of furnishing cement for construction.—*Highway Builder.*

LIME PRODUCED IN THE UNITED STATES IN 1922 AND 1923 (ESTIMATED)

State	1922			1923 (Estimated)				Percentage of increase or decrease in 1923	
	Hydrated lime (Short tons)	Total lime Short tons	Total lime Value	Hydrated lime (Short tons)	Total lime Short tons	Total lime Value	Average value Per ton	Hydrated	Total
Ohio	537,816	752,916	$6,495,066	596,000	856,000	$8,250,000	$9.64	+11	+14
Pennsylvania	172,179	719,536	5,581,794	173,000	750,000	6,255,000	8.34	+ 0.5	+ 4
Missouri	56,024	203,984	1,953,524	64,450	251,000	2,454,000	9.78	+15	+23
West Virginia	49,712	210,146	1,643,055	48,000	243,000	2,111,000	8.69	— 3	+16
Wisconsin	21,680	189,558	1,589,931	20,350	227,600	2,208,000	9.70	— 6	+20
Alabama	15,016	168,135	979,331	14,500	198,000	1,300,000	6.57	— 3	+18
Virginia	15,284	152,436	1,251,683	30,600	175,000	1,350,000	7.71	+90	+15
Massachusetts	(*)	164,980	2,510,368	(*)	172,000	2,687,000	15.62	0	+ 4
Maine	(*)	127,840	1,757,480	(*)	139,000	1,898,000	13.65	— 7	+ 9
Indiana	38,832	113,246	938,645	44,000	128,000	1,152,000	9.00	+13	+13
New York	(*)	96,320	957,079	(*)	127,000	1,300,000	10.24	—12	+32
Tennessee	26,029	126,305	939,039	38,200	124,000	972,000	7.84	+47	— 2
Illinois	13,004	85,425	860,945	15,100	91,000	990,000	10.88	+16	+ 7
Michigan	(*)	53,635	484,945	(*)	80,800	842,000	10.42	—33	+51
Maryland	40,976	71,261	554,194	30,000	66,500	570,000	8.57	—27	— 7
California	(*)	55,161	683,774	(*)	65,000	862,000	13.26	+14	+18
Texas	21,163	52,552	524,985	22,200	62,000	597,000	9.63	+ 5	+18
Connecticut	(*)	52,108	743,742	(*)	59,700	833,000	13.95	+29	+15
Vermont	(*)	44,745	565,498	(*)	52,000	616,000	11.85	—13	+16
Minnesota	(*)	27,670	307,270	(*)	29,700	342,000	11.52	+74	+ 7
Undistributed	98,348	171,658	1,932,691	109,600	159,700	1,824,000	.....	.....	.....
	1,106,063	3,639,617	$33,255,039	1,206,000	4,057,000	$39,413,000	$9.70	+ 9	+11

(*) Included under Undistributed.

To Study Cement and Concrete from A to Z

U. S. Bureau of Standards Is Seeking Most Improved Methods of Use and Manufacture

ABROAD and scientific investigation of the properties of cement and concrete will be undertaken by the Bureau of Standards of the Department of Commerce in conjunction with the Portland Cement Association.

The program, which is the result of many conferences between the Bureau of Standards and the Portland Cement Association, has now received the full endorsement of the Advisory Committee to the Department of Commerce on Cement and Concrete and will be put into effect so soon as the technical forces can be assembled.

The committee was assisted in its conclusions by Assistant Secretary of Commerce J. Walter Drake and representatives of the Portland Cement Association, the American Concrete Institute, the Bureau of Standards and the Division of Building and Housing, both of the Commerce Department, the Reclamation Service of the Department of the Interior, and the Navy Department.

Besides utilizing the results of its own study of the problem, it is the purpose to secure from all laboratories, research institutions, organizations and individuals such information as they may possess regarding concrete as will permit the committee to recommend to the public the most improved methods for making and using concrete.

The scientific research will include an intensive study of the chemical and physico-chemical properties of portland cements, of the raw materials from which they are manufactured and of the products into which they are converted when used in concrete. The investigation will involve a study of the pure ingredients, the influence of rock impurities and the natural deviations from the maximum composition, the temperature and time effects in manufacture, the reactions occurring in setting, the physical and colloidal behavior and hydration phenomena in setting, and the physico-chemical influence of many extraneous agents possibly affecting the material in service.

At the second meeting of the Advisory Committee there were in attendance all the members of the committee as follows: John Lyle Harrington, chairman, engineer, Kansas City, Mo.; C. H. Boynton, cement manufacturer, New York, N. Y.; N. Max Dunning, architect, Chicago, Ill.; H. C. Turner, contractor, New York, N. Y.; Charles M. Upham, highway engineer, Raleigh, N. C.

In addition the following represented the Portland Cement Association, the American Concrete Institute, the Department of Commerce, the Department of the Interior and the Navy Department: *Portland Cement Association*—Frederic W. Kelley, president; Prof. D. A. Abrams, in charge Structural Materials Research Laboratory; G. E. Warren, assistant general manager.

American Concrete Institute—A. E. Lindau, president.

Department of Commerce—George K. Burgess, director, Bureau of Standards; P. H. Bates, Bureau of Standards; John M. Gries, Division of Building and Housing; F. P. Cartwright, Division of Building and Housing.

Interior Department—C. A. Bissell, Reclamation Service.

Navy Department—R. F. Bessey, Bureau of Yards and Docks.

Mr. Kelley presented the outline of the investigation on portland cement through the co-operation of the Bureau of Standards and the Portland Cement Association. In brief the program comprises the following:

Program Outlined

(1) Study of available literature on the constitution of cements and related topics.

(2) Consideration of related problems which have a bearing on the manufacture and use of cement.

(3) Outline of tests.

(a) Studies of pure compounds. Preparation of some of the important compounds in cements. These are to be prepared in small amounts, from pure, or relatively pure materials. They are to be subjected to following:

(1) Petrographic examination.

(2) Chemical analysis.

(3) Behavior on hydration.

(4) Other chemical and physical studies.

The objects of this work are: To check results obtained by other investigators and thereby provide a starting point for further studies and to extend our knowledge of the physical and chemical behavior of these compounds.

(b) Studies of impurities. Repeat (a), except introduce some of the impurities present in commercial cement (such as NgO, Fe_2O_3, Na_2O, etc.) and study the effect on the formation of the compounds and on their hydraulic properties.

(c) Manufacturing cements in experimental kiln. Similar to (b), except prepare the compounds in larger quantities in a small rotary kiln so that in addition to the petrographic and chemical studies, specimens may be made for tests of:

(1) Soundness,

(2) Mortar and concrete strength,

(3) Effect of destructive agencies—(Alkali, sea water, peat soils, etc.)

(d) Studies in existing cement plants. It is intended to take advantage of the possible wide variety of compositions and physical characteristics of raw materials existing in the industry to study the effect of these variations on the properties of the finished cement. The study of the finished cement would follow the lines indicated above for the purer compounds or laboratory prepared cements but would be extended to close observation of the conditions and methods used, as affecting the quality of the cement, existing in the plant, and to the larger and more detailed study of the resulting cements in various services.

(e) Hydration of cements, studies of catalysers, etc.

(f) Concrete-making value of cements. A study of the behavior of the special cements in concrete, following recent developments in other tests of this kind and applying standard methods to strength, resistance to weather and other destructive agencies.

The work outlined will be carried on jointly by the Portland Cement Association and the Bureau of Standards at the Bureau of Standards. It is contemplated that the Portland Cement Association will supply a staff of six engineers and chemists. This number will be augmented by a similar number from the Bureau. The entire equipment of the Bureau for this type of work will be available.

New Pacific Portland Cement Plant to be Ready in August

FULLY 600 men are now employed in construction work on the new cement plant of the Pacific Portland Cement Co. on the Redwood City water front. The three large kilns, which will form the first unit of the huge plant the company contemplates erecting here, are now practically completed, and it is expected that the plant will be ready for operation by August. In addition to the men working on the plant, a large force is engaged in constructing wharves and docks on Redwood creek for the accommodation of the big seagoing vessels that will be used in carrying out the output of the cement mills.

The road leading from the front of Chestnut street to the water front has been rebuilt and work is now progressing on the spur track the Southern Pacific Co. is constructing to connect with its main line.—Redwood City (Calif.) *Standard.*

Manitowoc Portland Cement Plant Polishing Up

THE new plant of the Manitowoc Portlant Cement Co., Manitowoc, Wis., is located on the Manitowoc river, which has been dredged to a depth of 21 ft., so as to admit the largest type lake freighters to the dock.

Michigan limestone and local clay will be used in the manufacture of cement by wet process. Limestone and coal will be received by boat and unloaded with a Mead-Morrison bridge crane having a capacity of 300 tons per hour. This bridge travels parallel to the plant on runways 900 ft. long. It covers a span of 234 ft. and will pile material to a height of 51 ft. It also reclaims materials from storage and delivers into bins, which feed the mills. The plant contains three 10x160 ft. Manitowoc Engineering Works' kilns, which will give a capacity of 3500 bbl. per day. Power will be derived from waste heat.

Shipments can be made either by rail or water. The plant is within the city switching limits, which is served by the Soo Line, Chicago & North Western, Pere Marquette and Ann Arbor railroads.

Manitowoc being one of the gateways through which an enormous amount of east- and west-bound traffic flows via car ferry across Lake Michigan, an ample supply of empty cars is assured since normally 40% of cars moving westward are empty. This, together with direct rail service to Wisconsin and Upper Peninsula points, will enable this plant to serve its territory to the best possible advantage.

The plant is now nearing completion and will be in operation by May 15. Since the first concrete on the mill was poured on September 18 it is believed that, without question, that this set a construction record for a plant of this capacity.

The brand name of the new cement will be "Badger State."

The officers of the company are Charles C. West, president; J. B. John, vice-president and general manager; L. E. Geer, secretary and treasurer; H. Vanderwerp, assistant general manager; P. G. Dawson, assistant secretary.

New President of National Slag Association

C. L. McKENZIE, president of the Duquesne Slag Products Co., Pittsburgh, Pa., is the new president of the

C. L. McKenzie

National Slag Association. While slag is his hobby, Mr. McKenzie is known to the engineering profession as one of the foremost bridge engineers in the United States, having erected bridges, particularly railway bridges, in nearly every part of the country as the head of a big structural steel erection concern.

Ask State Help to Get Slate Quarry Workers

A DEMAND for slate workers in the slate quarry regions of the country was indicated in a letter received recently by Commissioner C. F. Daugherty of the Federal-State Employment Bureau at Harrisburg, Pa.

The communication was sent from the National Slate Association in Philadelphia and asked the bureau to notify its various branches throughout the state of the demand for slate quarry workers, slate makers and rockmen in Pennsylvania, Vermont, New York, Virginia, Maine and Maryland. Nine working hours a day and four on Saturdays was given as the requirements for the workers and men who will settle permanently in the small towns were especially desired, the letter stated.

Utilizing Waste Slag from Blast Furnaces

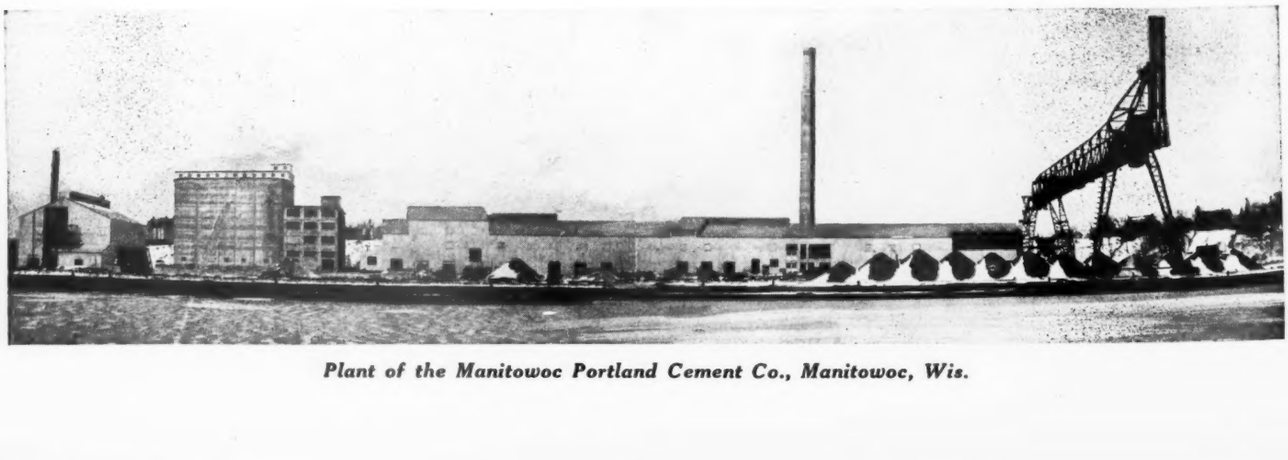
RESEARCH in Germany on the production of an artificial pumice from slag has resulted in interesting developments in the efficient utilization of this byproduct, especially for the manufacture of heat-insulating brick. An article in *Stahl und Eisen* shows that 3% of ferrous oxide must be recognized as a maximum if a satisfactory product is expected. Porosity is dependent largely on the presence of moisture during blowing, the froths made under such conditions containing an infinite number of sealed air pockets.

Bricks have been made from this slag froth, and satisfactory service is claimed, adequate annealing and storage being essential before use. The froth is first passed between water-cooled rolls, and then molded to shape. The result is an insulating medium of high relative efficiency, possessing the additional advantage of impermeability. Such a product should find wide application; and cheapness of production may be expected as soon as methods of manufacture are standardized.—*Chemical and Metallurgical Engineering.*

Ohio Sand and Gravel Company Reorganized

THE Muskingum Clay, Sand and Gravel Co., Zanesville, Ohio, was recently reorganized and the following officers elected: C. H. Walcutt, president; John E. Crooks, vice-president; Harry J. Nourse, secretary and general manager; Ralph P. Karns, treasurer and assistant general manager.

The company will build a first-class washing and screening plant and will market three grades of material: finishing, concrete and gravel. Operation is scheduled to start May 15.



Plant of the Manitowoc Portland Cement Co., Manitowoc, Wis.

New Ohio Sand and Gravel Operation

AFTER buying 33¾ acres of the John Trickler farm on the George's Creek road a short distance above the Kanauga depot, a Toledo concern represented by E. Fellabaum of that city is erecting a $50,000 plant to wash and load gravel there.

It is said this property has gravel bed from 50 to 78 ft. in depth and is practically inexhaustible. A large well has been constructed in the center of the tract and there is plenty of water for the washing operations.

This gravel will be loaded on cars right at the plant and will be shipped wherever a market exists for it in building, road construction and concrete work.

Mr. Fellabaum had been investigating possibilities of this tract for several years, and after having the gravel repeatedly analyzed and tested came to the conclusion that it was just what he wanted and closed the deal.

He paid $500 an acre for all the ground he purchased and expressed himself as well pleased at being able to secure it at that price.

The county owns a gravel pit adjoining the Toledo firm's purchase which it has been using for some time. Mr. Fellabaum says he can furnish the county gravel now at less price than it can load it from its own bank, owing to facilities for handling it.—*Gallipolis (Ohio) Times.*

New Evansville Sand and Gravel Producer

THE Koch Sand and Gravel Co., Evansville, Ind., was formed in November, 1923, with Henry F. Koch as chief stockholder. Mr. Koch is head of the George L. Mesker Steel Co. of Evansville and many other large industries, being one of the leading business men of Evansville. The other members of the firm are John F. Baker, who is connected with Mr. Koch in the Evansville Stations Co., Bert Koenig and John W. Ohl, who have been connected with the Evansville Sand and Gravel Co. for the past 18 years. Mr. Ohl will have charge of the river equipment and transportation, and Mr. Koenig will take care of the sales and production.

They have taken over the plants at Evansville and Mt. Vernon, Ind., formerly operated by the Evansville Sand and Gravel Co., installing new boats and equipment, and, in addition, have built a large crane which will work on a storage of 15,000 cu. yd.

Their capacity will be 50 carloads of sand and gravel, or 1500 cu. yd. per day, making their plant one of the largest and best equipped plants in this territory. They have a fleet of new Federal trucks, ranging from 2½ to 5 tons, and track room for 15 railroad cars at one switch. All in all, they are equipped to handle any kind and grade of material. They have already received several large contracts from their own county of Vanderburgh and several counties adjoining; in addition, they report some very nice commercial business.

Guy C. Baker Honored

GUY C. BAKER, vice-president of the Greenville Gravel Co., Greenville, Ohio, and secretary of the Ohio Sand and Gravel Producers' Association, has been chosen president of the Rotary Club of Greenville. Mr. Baker's many friends in the industry will rejoice in this well deserved honor.

Guy C. Baker

New Special Aggregate Plant for California

THE Stockton Mineral Products Co. is Stockton's newest manufacturing enterprise, according to announcement made recently by the department of industry of the Stockton chamber of commerce.

Arthur B. Foote and E. W. True, formerly of Grass Valley, are the founders of the new concern and have secured an excellent plant location at Lafayette and Van Buren streets. Already a large crew of men are busy at the site erecting a plant for the manufacture of roofing and stucco under exclusive processes.

Location of the new plant in Stockton reflects this city's advantageous position with regard to raw material sources, the materials for the mineral products concern being secured in the Mother Lode country. The factory will be completed in about 30 days and the firm, besides manufacturing, will deal in roofing and stucco materials.

Equipment for the new factory is being manufactured at Stockton plants.

Barge Canal Sand and Gravel Producer

J. BAKER SEROW, well-known sand and gravel man, is head and active manager of the Oswego Sand Co., which will operate a fleet of boats on the barge canal this year. Associated with him in the new enterprise are Frank Eno and S. A. Dunham, of Syracuse, while J. W. Grady, of New York, former barge canal traffic manager, will handle their boats.

The new company has purchased a big sand dredge at Toledo, Ohio, and this was to arrive about May 1. They have also purchased ten barges in New York and Mr. Grady will have charge of the handling of this fleet. In addition they have purchased a farm east of the city which will give the company the water rights and the privilege of taking the sand out of the lake in front of their property. They will also purchase a tug to handle their boats. Many big orders have already been secured.—*Oswego (N. Y.) Palladium.*

Portland Cement Association Engineer Returns from Japan

HOW the earthquake and fires that destroyed Yokohama and a large part of Tokyo, twisted and cracked great business blocks, is told in a report just compiled by Homer M. Hadley, engineer for the Portland Cement Association, who returned recently from Japan, where he made a thorough investigation of the damage.

Although the concrete used in Japan is far inferior to that used in this country, Mr. Hadley found that this material stood up splendidly against the fierce assaults of the fires and the twisting and rocking of the earthquake. Samples of the concrete materials in general use in Japan were brought to Seattle and were tested in the local laboratories. These tests showed that the Japanese produced concrete of a strength of 1100 lb. to the square inch, while the same mixture of American sand, gravel and cement averages about 2500 lb. to the square inch.

Figures given Mr. Hadley by the Tokyo building department of its survey of 592 reinforced concrete buildings in Tokyo show that 8 collapsed, 11 partly collapsed, 42 were greatly damaged, 69 were partly damaged and 462 were entirely undamaged by both earthquake and fire.

Of 16 large structural steel buildings in Tokyo 6 with reinforced concrete wall construction were the only ones that escaped undamaged. Stiffened and well-braced buildings of all kinds were not greatly damaged.

Of 436 brick structures in Tokyo surveyed by the Tokyo building department 10% collapsed, 23% partly collapsed, 20% were heavily damaged, 27½% slightly damaged and 18% undamaged. These buildings were low, the tallest being only four stories. —*Seattle (Wash.) Times.*

Comments from Rock Products Readers

Letters and Extracts of Letters to Rock Products Editors

Go After Politicians on Immigration Policy!

By WILLIAM J. GARRISON
Ridgway, Penn.

I AM enclosing herewith a copy of a letter to Hon. Albert Johnson member of congress which is self explanatory.

It seems to me every manufacturer ought to go after this bunch of politicians hammer and tongs to take each one of their arguments and tear them right to pieces instead of letting them be published and go unnoticed which makes them think they are getting away with something.

February 16, 1924.

Hon. Albert Johnson,
Chairman, Committee on Immigration,
Washington, D. C.

Dear Sir:

I note with interest your remarks (in a letter to me of February 12) regarding your committee having quite a number of alarming reports concerning immigration from Russia.

With immigrants from Russia like immigrants from any other country there are no doubt good and bad. However, if efficient representatives are located at the different ports from which immigrants sail for America, I see no reason why the general average of all classes could not be raised to a higher standard and be generally satisfactory.

Good, bad and indifferent men offer their services to industrial plants every day but the mere fact that they offer themselves does not mean necessarily that they are accepted since the average industrial concern has an efficient organization to handle just this very thing, and there is no reason to my mind why this great government of ours cannot have just as efficient men to look over and scrutinize generally not only the physical but the moral status of these immigrants that present themselves, and thereby finally arrive at a result which will not only give us sufficient labor to operate our plants to capacity but at the same time have the quality of this labor of a much higher standard than it is at the present time.

If you will pardon me, and it is perhaps through my lack of knowledge of the circumstances, but the further I plod through the published report that you gave me, the more I am led to believe that the real object of immigration is lost sight of entirely and that too many of your committee are prejudiced against a few classes and thereby make them all suffer for the few and finally through this narrow view, if I may call it such, our American industries are suffering every day.

Another thing which strikes me very forcibly: I notice very frequently in this published report the words "cheap labor." The way it rings in my ears it seems to carry a sort of sarcastic connection which usually follows the despotic attitude of labor unions.

With labor unions like anything else, so long as they live and practice the golden rule, they should prosper but when they do not, they should take their medicine the same as anybody else and eventually that is what will happen.

Referring to that part of your report in connection with the beet sugar industry: One of your committee asks the question as to what is to become of the young boys and girls who are coming out of the universities, etc. He inferred that industries would have to make conditions more attractive not only by way of more money, but by better living conditions. It looks to me as though part of your committee need a little bit of practical experience and not so much theory. In the first place we pay more right now for breaking and loading stone per day than the average young fellow can get in a white collared job in one of these offices. The work is healthy and out of doors and so located that these young boys could live at home but we can't get them to do the work. They have repeatedly advised the writer that the only thing this work needed was a ball and chain; that this class of work was for convicts, etc. Most Americans and many of the more experienced foreigners will absolutely not accept any position where there is real work connected with it; and personally I am speaking from an experience of 15 years along this very line.

From the published report some of your committee have some wonderful ideas as to how business should be run. I would suggest that you send them out, one or two to each industry which seems to be having trouble not only to let them prescribe but stay on the job and around there long enough to see whether their theory works out. I believe they would learn something they do not know and I further believe that you and the rest of the committee would be more willing to listen to practical men than to give so much time to sitting in Washington and haggling over details which as far as I can see from your published report do not amount to much except to take up a lot of time.

Another thing that rather amuses me in connection with your investigation of the beet sugar industry: At one place one of your committee makes a statement that he "feels that the witness should be taken into the committee's confidence and conditions stated frankly," or something to that effect. If I understand this thing correctly, you and every other man in Washington connected with the government are public servants and are supposed to do the will of the people and the people are not your servants and the sooner that is out of the system of the politicians the better.

Here's Your Chance!

THIS page is for you — our reader—to express your views. We don't believe it helps you or your industry to "knock" the other fellow or his product—but that's your privilege if you see fit to do so over your own name. We will not print anonymous communications.

This page is a clearing house for your ideas, impressions and suggestions; and while the editors assume no responsibility for the views of their correspondents, on the other hand, they have no intention of supressing such views. Let's have them. Let's see how interesting you can make this page.—The Editors.

British Lime Manufacturer to Visit America

SIR: I have been at length able to arrange a short trip to the United States in order to see something of your lime industry—which is very much in advance of ours in this country. I cabled my intention to the National Lime Association and they have been good enough to reply to the effect that they will arrange for me to visit some of your plants. If—with your very thorough knowledge of the American lime industry—you would also assist me with your advice in what I might most profitably see in the short space of time that will be at my disposal I should be very greatly indebted to you. My chief interest lies with works producing about 2000 tons per month of lump lime for constructional purposes produced from flare kilns, this being the particular scope and output of my own works, but I also hope, of course, to see one or two of your most modern plants producing upon a much larger scale.

As the question of fuel costs is a very important one in this country I am very interested in the question of the efficiency and the labor costs of the various types of modern kilns and I shall also be very interested to gain information upon the production of hydrate, which is a development that has, up to the present, only developed to a very small extent in this country, but which will, of course, as in your own case proceed rapidly. As it is a question of creating a demand for hydrate and starting from small beginnings in respect the smaller hydrating units will appeal to me, although as in the case of complete works, a larger hydrating plant will be very informative.

C. W. D. Rowe,
Managing Director,
The Dunstable Lime Co. Ltd.

Peterborough, England,
February 29, 1924.

Would Open Potash Lands for Mining

A BILL to promote the mining of potash on the public domain was introduced recently by Chairman Ladd of the Senate public lands committee. Under its provisions prospectors would be permitted to operate on sections not to exceed 2560 acres in area, and upon the location of potash they would be granted leases to the land. Interest in potash production is increasing.

Editorial Comment

Developing Mineral Resources

Various newspaper clippings reach us reporting the really commendable activity of the American Mining Congress in making surveys of the mineral resources of the various states. One of the representatives of this organization, who is working in the South, seems to be particularly successful in getting into the news columns of the local press. And most of these notices, we believe, are doing more harm than good, for while the data gathered are valuable for professional purposes they are very apt to be misinterpreted, innocently by some and designedly by others.

Pointing to marl, limestone, silica deposits, etc., this investigator emphasizes their great value as raw materials for the manufacture of portland cement, lime, glass, etc. "The state," he says, "has been unconscious of her hidden wealth, and has not taken steps to exploit it."

Mining men are used to dealing with metals like gold, silver, copper, or with coal, for which one may say there is an unlimited world market at a fairly stable price. The success of a new project can be fairly accurately estimated by the margin the proposed plant can save under this price and under the costs of production of other operators.

Mining men are not used to dealing with minerals like limestone, sand, gravel, etc., whose products are consumed within a radius of one or two hundred miles of their point of production, and the price of which is very largely controlled by local competitive conditions. It is a mistake that even experienced rock products operators sometimes make to assume, we will say, that there is a 25-cent profit in limestone because the current price is $1 a ton and we figure out how we can produce it for 75 cents. The very day we start to produce the local price may drop to 60 cents, and stay at 60 cents as long as we attempt to produce.

In other words vast deposits of these materials in inaccessible places and in undeveloped localities are practically worthless. Their development follows—never precedes—other industrial development; and all the geological surveys and chambers of commerce in the world cannot force their development without at the same time creating markets for consuming the new production.

Slump in Coal Production

Production of bituminous coal to April 19 shows a rapid decline to a level of that in 1921. Production for the week ending April 19 was only a little more than two-thirds of production for the corresponding week of 1923. During 1923 production was more uniform throughout the year than for any previous year. Production was maintained on a basis fairly close to 1,700,000 tons a day. Now it is averaging around 1,200,000 tons daily, with an accumulated underproduction (compared with 1923) of about 10 days' output.

Of course this does not necessarily presage a shortage of coal later on, but it does show an unfortunate tendency to hold off taking coal on a fairly uniform basis, and will create a situation tending to throw the coal industry back into irregular operation and shipment which have so disrupted transportation and industrial conditions in times past.

If we can believe the business prophets things today are about as active as they were a year ago; and as much coal should be consumed and moved as a year ago. No one knows just how much the building situation of last year was favorably affected by the steadiness of the coal movement and the avoidance of transportation jams. You, in the rock products industry, are probably in a better position than others to value this factor. Everyone agrees that the construction activity was the backbone of last year's prosperity and that it will be the same of this year's. Various ailments of that backbone ought to be closely watched by those who are a part of it, and "an ounce of prevention is worth a pound of cure."

From Engineering to Aesthetics

One who visited the Concrete Institute held in Chicago recently was impressed with the tendency to turn from the engineering side of concrete construction to the artistic side. There is a growing belief that the engineering problems of concrete are in a fair way to be solved. We know how to design concrete of definite strength and we are evolving methods that will insure its being placed in the wall with the strength for which it has been designed. The rest is a matter of overcoming prejudice and educating the architect and contractor. The work of Prof. Abrams and others on one hand and the "inundation method" of mixing and similar definite methods on the other, are the answer to those who still believe that concrete has not the same dependability as some other building materials. But while this is true, we will all welcome the news, that is given elsewhere in this issue, that the Bureau of Standards is to study the whole subject of concrete design and placing and will come to conclusions that will have the weight of authority. Let us hope that the aesthetic side of concrete construction is not to be neglected and that its study will be pursued with equal thoroughness, if not by this body by some other association equipped to decide on the artistic possibilities of this form of construction.

Canadian Rock Products Industries

Tariff Changes Will Make Machinery Costs Considerably Less

SEVERAL tariff changes were announced in the Canadian budget speech given by Hon. J. A. Robb in the Canadian parliament at Ottawa on April 10. The sales tax has been reduced from 6 to 5% generally and the following changes in the tariff affecting the quarrying industry have been made:

MINING AND QUARRYING INDUSTRY

Items	—Preferential Tariff— Old Rate	Proposed Rate	—General Tariff— Old Rate	Proposed Rate
Rock drills, percussion coal cutters, coal augers, stamp mills, ore and rock crushers, and rotary and coal drills	15	10	27½	20

		British Preferential Tariff	Intermediate Tariff	General Tariff
TARIFF ITEM 453C	Ore crushers, rock crushers, stamp mills, rock drills, percussion coal cutters, coal augers, rotary coal drills, and complete parts of all articles mentioned in this item, when for use exclusively in mining operations	10%	15%	20%

The sales tax on these particular items has been removed. In addition, the sales tax is removed from mining cars and other similar appliances used for mining or quarrying and from explosives. The official statement of tariff on quarrying machinery is as follows:

In further explanation of this item the official memorandum No. 45 says: "The following goods shall be exempt from the consumption or sales tax: Cars and other similar products for use exclusively at a mine or a quarry for mining or quarrying; articles and materials to be used exclusively in the manufacture of goods enumerated in Customs Tariff item 453-C, etc.; articles and materials to be used exclusively in the manufacture of cars and other similar appliances to be used exclusively at a mine or a quarry for mining or quarrying; . . . materials not to include plant equipment, consumed in process of manufacture or production which enter directly into the cost of goods subject to the consumption or sales tax, manufactured or produced by a licensed manufacturer or producer; materials not to include plant equipment, consumed in process of manufacture or production which enter directly into the cost of goods enumerated in Customs Tariff items 453-C, etc.

Canada Cement Situation

Frank P. Jones, president of the Canada Cement Co., Ltd., makes the following comment on information that has been published on the cement industry in Canada recently: Information published in the press recently states that the "total consumption in Canada increased from 3,597,394 bbl. in 1918 to 7,066,538 bbl. in 1923, but fails to state that the consumption in 1923 was 38% less than in 1913, so that, as a matter of fact, in the last seven years I regret to say Canada's consumption of cement has not increased but has decreased."

A report has been issued giving the stone production in Canada in 1922. The total value of products was $5,974,993. The values of the chief kinds of stone quarried were: Limestone, $4,175,941; granite, $1,486,250; marble, $231,894, and sandstone, $80,908. The outputs of the principal producing provinces were as follows: Ontario, $2,969,926; Quebec, $2,342,316; British Columbia, $324,591; Nova Scotia, $119.492; Manitoba, $106,638; New Brunswick, $104,730, and Alberta, $7300.

Arkansas Rock Products Industry Looking Up

A CINCINNATI (Ohio) special to the Nashville (Ark.) *News* states:

"The Krippendorf-Tuttle White Cliffs Products Co. of this city and White Cliffs, Ark., have made announcement of their intention to erect a cement plant on their property at White Cliffs, construction of which will start within a few months. The plant is to be built at a cost of about $2,250,000 and will employ a large force of men.

"This announcement will be received with a great deal of interest by all the people of this section. The Krippendorf-Tuttle White Cliffs Products Co. already has a large crushing plant at White Cliffs and owns 900 acres which is practically solid limestone. The erection of this plant will mean much more than the labor it will itself furnish, as it will also insure cheap fuel in this section for other enterprises which have been prevented from coming here by the lack of cheap fuel.

"A number of years ago a very large cement plant was erected at White Cliffs and operated for some time, the plant finally going into the hands of a receiver because the fuel problem could not be successfully met. Attempts have been made to organize companies for the development of the large deposit several times since, but the fuel problem has always balked development.

"With the erection of the power dam of the Arkansas Hydro-Electric Co. at Magnet Cove electric power will be available for the plant at a price which insures manufacture of cement at a low enough price to compete with plants elsewhere.

"With the transmission of the power into this territory it is entirely probable that many small manufacturing enterprises will come here where the raw material can be secured, the electric power solving the only problem which has been holding back development. With the recent announcement by the Hydro-Electric Co., a $60,000 gravel crushing plant was purchased by capitalists and will be installed soon near Murfreesboro, and this will be only one of many such plants which will be installed in this section with the opening of the power plant. It is estimated that the dam will be constructed and the plant ready for operation by October 1 of this year."

The Krippendorf-Tuttle White Cliffs Products Co.'s present plant was described in detail in ROCK PRODUCTS, November 3, 1923.

Busy on New Missouri Stone Plants

R. N. McDOWELL, president of the Consolidated Crushed Stone Co. of Kansas City, Mo., was in Nashua recently looking after business matters in connection with the stone crushing plant which his company will put in at Amory switch, just north of Nashua. Mr. McDowell reports that work will be begun at once on putting in extensive switching facilities and that as soon as this work is completed the work on the plant will be started. He hopes to have a plant with a 1500-ton daily capacity in operation by July 1. This will later on be increased to a 3000-ton capacity. This work will require a large number of men and should be of material benefit to Nashua.—*Smithville (Mo.) Democrat.*

Superintendent Arrives

Work at the rock crusher, which is being reopened to furnish 200,000 cu. yd. of rock for the state highways, began recently with the arrival of T. C. Buskirk from Kansas City, who will be superintendent of the quarry, and a few men.

Mr. Buskirk immediately put this initial force to clearing land for the construction of the rail switches to the plant. Other men will arrive shortly to begin overhauling the plant. One of the officials of the company is now in Chicago seeing about the shipment of the new machinery which is to be installed. All machinery will be driven by electric motors, requiring about 300 hp.

The full force, which will include some 200 men, will not be on the job until the plant is fully repaired and ready for operation, which will take some time.

Mr. Buskirk, who had many years experience in this work, said that the idea of building a camp at the plant for the men had been abandoned for the present and they will live in town.—*Gallatin (Mo.) Democrat.*

Traffic and Transportation

By EDWIN BROOKER, Consulting Transportation and Traffic Expert,
Munsey Building, Washington, D. C.

Proposed Changes in Rates

THE following are the latest proposed changes in freight rates up to the week beginning April 14:

Central Freight Association

8213 Sand and gravel. In open top cars, Killbuck, Ohio, to Cambridge, Ohio. Present, 13½ cents; proposed, 90 cents per net ton.

8214. Crushed stone and screenings. Greencastle, Ind., to Lebanon, Ind. Present, 86 cents per net ton; proposed, 75 cents per net ton.

8215. Core sand. Vassar, Mich., to C. F. A. and Ontario points:

Rates in cents per net ton

To	Present	Proposed
Akron, Ohio	470	252
Chatham, Ont.	390	258
Cleveland, Ohio	450	252
Columbus, Ohio	460	252
Dayton, Ohio	470	252
Erie, Penn.	410	252
London, Ont.	390	258
Oil City, Penn.	530	290
Pittsburgh, Penn.	530	290
Sandusky, Ohio	420	214
St. Thomas, Ont.	410	258
Welland, Ont.	470	283

8221. Slag. Lorain, Ohio, to Sullivan, Ohio. Present, 90 cents per net ton; proposed, 80 cents per net ton.

8222. Gravel and sand. Pleasant Lake, Ginger Hill, Rupel and Deeter, Ind., to Indiana and Michigan. (Cents per ton of 2000 lb.)

From Pleasant Lake, Ind. (N. Y. C. R. R.)

To	Present	Proposed
Sturgis, Mich.	76	88

From Ginger Hill, Ind.

To	Present	Proposed
Morehouse, Ind.	70	75
Bristol, Ind.	70	76

From Rupel, Ind. (N. Y. C. R. R.)

To	Present	Proposed
White Pigeon, Mich.	70	----
Klinger Lake, Mich.	70	----
Sturgis, Mich.	75	----

From Deeter, Ind. (C. C. C. & St. L. Ry.)

To	Present	Proposed
Morehouse, Ind.	70	98
Bristol, Ind.	70	98
White Pigeon, Mich.	70	98
Klinger Lake, Mich.	70	98
Sturgis, Mich.	75	98

8233. Sand and gravel. Silverwood, Ind., to stations on the C. A. & S. R. R. Present, 6th class rates; proposed, to stations La Crosse to Percy Junction, Ind., inclusive, $1.00; to stations Goodland to Swanington, Ind., inclusive, 90 cents; to stations Oxford to West Union, Ind., inclusive, 80 cents per net ton.

8263. Sand and gravel. Merom and Riverton, Ind., to Kenner, Xenia, Greendale and Iuka, Ill. Present, $1.26 per net ton; proposed, $1.13 per net ton, minimum weight capacity of car.

8264. Sand and gravel. Kern. Ind., to Free, Dunn, Handy, Tab, Stewart, Sloan and Allison, Ind. Present, 88 cents per net ton to Free, Dunn, Handy and Tab, Ind., and 84 cents per net ton to Stewart, Sloan and Allison, Ind.; proposed, 76 cents per net ton.

8271. Crushed stone. Chicago to North Berne, Ohio. Present, 24½ cents; proposed, $3.10 per net ton.

8267. Crushed stone. McVittys, Ohio, to Jackson Center and South Solon, Ohio. Present, 13 cents and 15 cents; proposed, 85 cents and 95 cents per net ton.

8269. Crushed stone. Perkins Spur, Ind., to points on C., I. & L. Ry., in Indiana (in cents per net ton). Proposed, to Guernsey, 88 cents; Pattons, 88 cents; Lennox, 88 cents; Sleeth, 88 cents; Pittsburgh, 88 cents; Delphi, 88 cents; Radnor, 95 cents; Ockey, 95 cents; Owasco, 95 cents; Rossville, $1.02; Frankfort, $1.02; Dinwiddle, $1.02; Kersy. 97 cents; Lena, 95 cents; Gifford, 95 cents; Galloway, 97 cents; Zadoc, 97 cents; McGlinn, 97 cents; Newland, 95 cents; Lewiston, 95 cents; Moody, 88 cents; Della, 88 cents; Randle, 88 cents; McCoysburg, 88 cents; Monon, 88 cents; Shelby, $1.02; Thayer, $1.02; Roselawn, 97 cents; Fair Oaks, 97 cents; Parr, 95 cents; Surrey, 95 cents; Rensselaer, 92 cents; Pleasant Ridge 88 cents; Lee, 88 cents; LaCrosse, 97 cents; Wilders, 97 cents; San Pierre, 95 cents; Medaryville, 95 cents; Francesville, 88 cents; Smithson, 82 cents; Chalmers, 82 cents; Brookston, 88 cents; Battle Ground, 88 cents; Lafayette, 95 cents.

8277. Crushed stone. White Sulphur, Ohio, to points in Ohio. Present, sixth class; proposed, to Selma, Cedarville, Wilberforce, Xenia, $1 per net ton; to Glade Run, London, Florence. South Charleston, 90 cents per net ton; to Sullivan, Alton, West Jefferson, 80 cents per net ton.

8279. Molding sand. Marine City, Mich., to Michigan.

To	Present Cents per Cwt.	Proposed Cents per Ton
Alma	19	164
Muskegon	22	200
Plymouth	14½	176
Saginaw	17	155

8281. Crushed stone. White Sulphur, Ohio, to points in Ohio. Present, sixth class; proposed, to Piqua, Fletcher, Conover, St. Paris and Westville, $1; to Hagenbaugh, Urbana, Cable, Woodstock. Unionville, Plain City, Hayden, Hilliards and Marble Cliff, Ohio, 90 cents per net ton.

8286. Crushed stone. Lehigh, Ill., to LaFayette, Clarks Hill, Colfax and Lebanon, Ind. Present, $1.01 per net ton; proposed, 76 cents per net ton to LaFayette, Ind., and 88 cents to the other destinations.

8289. Crushed stone, in bags or in bulk. Cincinnati, Ohio, and points taking same rates, to C. F. A. territory and east of Western Termini of Eastern Trunk Lines, including Canada. Present, sixth class, minimum weight 40,000 lb.; proposed, 83.33 per cent of sixth class, minimum weight 50,000 lb.

8290. Lime. Canton, Ohio, to various destinations listed on pages 35, 36 and 37 of P. R. R. Trf. I. C. C. F1475. Present, published in the aforesaid tariff; proposed, to restore Classification basis.

8292. Sand and gravel. Richmond, Ind., to Liberty, Ind. Proposed, 80 cents per net ton.

8296. Lime. Minimum weight 30,000 lb., Durbin and Cold Springs, Ohio, to Detroit, Mich. Present, 16 cents; proposed, 14½ cents.

Illinois Freight Association

2351-B. Sand. Carload. Present, $2.14 per net ton. Ottawa, Ill., to Benton Harbor, Mich.; proposed, $2.02 per net ton, Ottawa, Ill., to Benton Harbor. Mich., and from Muscatine, Ia., to same destination on usual differential over Ottawa.

2368-A. Plaster and stucco. Carload, from Joliet, Ill., to Chicago, Ill. Present, 6½ cents per 100 lb. via E., F. & E. Ry. and Griffith, Ind., and C. & O. R. R., 9½ cents via C. & A. R. R. and class rates via other lines; proposed, 7 cents per 100 lb.

2422. Crushed stone. Carload, from Chasco, Ill., to stations on B. & O. R. R. routed via Altamont and Salem, Ill. Present, Class E; proposed (representative points), $1.13 to Bannister, Flora, Cowden, Louis, Taylorville, etc., and $1.26 to Geff, Fairfield, Odin, etc., minimum weight 90 per cent of marked capacity of car, same as currently in effect from Thornton, Ill.

2423. Sand and gravel. Carload. Lincoln, Peoria and Pekin, to Litchfield, Ill. Present, $1.01 from Lincoln; $1.14 from Peoria and Pekin; proposed, 88 cents per net ton from Lincoln; $1.01 from Peoria and Pekin.

2438. Sand and gravel. Carload, from Palestine, Ill., to Kenner, Xenia, Greendale and Iuka, Ill. Present, $1.26 per net ton; proposed, $1.13 per net ton.

2439. Stone, crushed. Carload, from Quincy, Ill.

To	Present Cents	Proposed Cents
Mark	76	60
La Grange	88	65
Canton	113	70
Fenway	113	80
Gregory	113	80
Alexandria	113	90

2440. Stone, crushed. Carload.

From Quincy, Ill.

To	Present Cents	Proposed Cents
Bushnell, Ill.	126	113
Astoria, Ill.	151	139
Table Grove, Ill.	139	126
Youngstown, Ill.	139	126
Swan Creek, Ill.	139	126
Larchland, Ill.	151	139
Gerlaw, Ill.	151	139
Pile, Ill.	113	101

From Hannibal, Mo.

To	Present Cents	Proposed Cents
Shinn, Ill.	88	101
New Canton, Ill.	88	101
Brewster, Ill.	88	101

2446. Sand and gravel. Carloads from Gladstone, Ill. (Jaynes Spur). Proposed (to representative points), $1.01 per net ton to Ferndell, Shale City, etc.; $1.10 to Matherville; $1.20 to Pre-emption, Wagner, etc.; $1.26 to Milan, etc.; minimum weight 90 per cent of marked capacity of car. Present, Class rates, classification basis.

2447. Stone, crushed. Carloads, minimum weight 90 per cent of marked capacity of car, from Gladstone, Ill. (Jaynes Spur) to representative points.

To	Present Cents	Proposed Cents
Galesburg, Ill.	88	80
Monmouth, Ill.	88	80
Aledo, Ill.	101	80
Joy, Ill.	101	80

New England Freight Association

6190. Lime. Minimum weight 50,000 lb., Danbury, Canaan, East Canaan, New Milford, Redding, Conn., Lee and West Stockbridge, Mass., to Boston, Mass., 16 (to include switching charges of B. & M. R. R. within switching limits at Boston). Reason: equalization of rates via competing lines.

6239. Lime. Minimum weight 50,000 lb., Ashley Falls, Great Barrington, Pittsfield, Sheffield, West Stockbridge, Mass., Canaan, Danbury, East Canaan, New Milford, and Redding, Conn., to Lowell (B. & M.), Mass., 17 (to include switching charges of B. & M. R. R. at destination). Reason, demands of shippers.

Southern Freight Association

13273. Gravel, paving or cement. Carload, from Graybill, Ga., to Port Wentworth and Stilson, Ga. Present, to Port Wentworth, $1.53; to Stilson, $1.80 per net ton; proposed, to Port Wentworth, $1.40; to Stilson, $1.58 per net ton. Proposed rate to Port Wentworth is based on the scale submitted by carriers to the Georgia Public Service Commission, applying S. & A. Ry. distance of 116 miles from Wrens to Port Wentworth; to Stilson, Ga., the proposed rate is the same as present rate to Blichton, Ga.

13294. Slag. Carload, from Birmingham, Ala., and Group to Central of Georgia Ry. stations between Macon and Wadley, Ga., including Wadley, but not including Macon, Ga. It is proposed to reduce present rates to basis of the proposed Georgia scale, less 10 per cent.

13298. Stone, rubble, crushed or broken. Carload from Dolcito, Brownson and Gantt's Quarry, Ala., to Gulfport, Miss. Present, from Dolcito, $1.80 per net ton; from other points Class "A" rates apply; proposed, from points named, $1.69 per net ton, same as rate in effect to New Orleans, La.

13312. Sand. Carload, from Kermit, Va., to destinations named below. Present and proposed rates are in cents per net ton. To Huntington, East Huntington, West Huntington, Guyandotte and Westmoreland, W. Va., present $2.10; proposed, $1.95; Charleston, South Charleston, Elk, Kanawha City, South Ruffner and St. Albans, W. Va., present, $2.25; proposed, $2.10; Cedar Grove, W. Va., present, $2.50; proposed, $2.35. The proposed rates to Charleston and group and Cedar Grove are the same as concurrently in effect from Rockwood, Mich., with rate to Huntington Group, the present differential less.

13315. Crushed stone and agricultural stone. Carload, from Calera, Ala., to stations on the N. O. & M. Division, Pensacola Division, P. & A. Division and A. & F. Division of the L. & N. R. R.; also Birmingham and Montgomery, Ala., Class A rates now apply on crushed stone; while class N rates apply on agricultural stone. It is proposed to establish commodity rates from and to other points on the L. & N. R. R. for similar distances. Statement of proposed rates will be furnished interested parties upon request.

13336. Slag. Carload, from Birmingham, Ala. and Group, to Louisville, Miss. Present, $6.80 per ton (Class A); proposed, $1.67 per net ton.

(Applicable only when consigned to state or county officials and for the exclusive use and benefit of the state or county.) The proposed rate is based on the Alabama-Georgia scale for the short line distance, reduced 10 per cent.

13355. Lime screenings. Carload, minimum weight 30,000 lb., from Sherwood, Tenn., to stations on the N. C. & St. L. Ry. in Tennessee. Present rates range from $1.02 per 10 miles and under up to $2.82 per net ton for 125 miles and over 120 miles. It is proposed to establish mileage rates ranging from 68 cents for less than 10 miles up to $1.13 per net ton for 100 miles and less than 125. The proposed mileage scale is the same as that now applicable from Summitville, Tenn.

13360. Sand. Carload, from Mount Holly, N. C., to South Carolina points named below. Present and proposed rates are (in cents per ton, 2000 lb.):

To	Present Cents	Proposed Cents
Fort Mill, S. C.	113	95
Rock Hill, S. C.	117	102
Clover, S. C.	135	117
Filbert, S. C.	140	117
York, S. C.	144	117

The proposed rates are arrived at on basis of applying the joint line scale as proposed by carriers for application in Georgia and Alabama, reduced 10 per cent, for the short line workable distance to all points, except to Rock Hill, S. C., the proposed rate is made same as present rate on sand, carload, from Mount Holly, N. C., to Chester, S. C.

13370. Lime. Carload, from Burns, Sherwood, Summitville, Tenn., and Cumberland, Ala., to Charleston, Miss., Memphis, Tenn., combination in connection with Agt. Jones' I. C. C. U. S. 1, now apply; the present and proposed rates being:

From	In cents per net ton: Present Carload minimum weight 30,000 lb.	Proposed Carload minimum weight 60,000 lb.
Burns, Tenn.	372	350	280
Sherwood, Tenn.	417	380	304
Summitville, Tenn.	417	380	304
Cumberland, Ala.	417	390	312

The suggested rates are based on the joint line scale proposed under the general lime revision.

13409. Sand and gravel. Carload, usual description, from Old Dominion Arundel Siding and Ellerslie, Va., to Petersburg, Va., proper. Present, 51 cents per net ton; proposed, 36 cents per net ton, such rate to apply to Petersburg, Va., proper, and present rate of 51 cents subject to Agt. Kelley's I. C. C. U. S. 1, to be made to apply only as a proportional rate. The proposed rate is the same as the present rate from Puddledock, Va.

13415. Cement. Carload, from Kingsport, Tenn., to Hartwell, Ga., and stations on the Southern Railway between Tococoa and Hartwell, Ga. Present, 26½ cents; proposed, 18 cents per 100 lb. Proposed rate to Hartwell is same as present rate to Tococoa, Ga., and rates to stations between Tococoa and Hartwell made same as proposed to Hartwell.

Transcontinental Freight Bureau

4672. Crushed rock, in sacks or in bulk. Carload, E. B. Request for publication of rate not exceeding 30 cents per 100 lb. to Mississippi river points and 40 cents per 100 lb. to Chicago, Ill., and adjacent points from Los Angeles, Mock, Alico and Dolomite, Cal., under tariff 3P (I. C. C. 1108, R. H. Countiss, agent) to enable producers to meet competition in middle western markets.

Trunk Line Association

11931. (Increases) (carrier). To establish through rates on cement, carload, from Trunk Line producing points to Abbottstown, Pa., 3½ cents, and to East Berlin, Pa., 4 cents per 100 lb., higher than rate to Berlin Junction, Pa.

8173. Cement, common, hydraulic, natural or Portland. Mitchell and Limedale (C. I. & L. Ry.), Ind., to Evansville, Ind. (File K-85-59-9, Docket No. 4465). Present, 10½ cents from Mitchell and 11 cents from Limedale, Ind., per C. I. & L. Tariff I. C. C. 4207; proposed, 7 cents from Mitchell and 7½ cents from Limedale; to apply only as proportional rates on traffic destined to all points in the state of Kentucky, as shown in Agent Jones' Tariff, I. C. C. 1493, except the following: Group A—Alcorn, Alpine, Avon, Bowen, Bryant, Burgin, Burnside (C. N. O. & T. P.), Camp Daniel Boone, Cedar Grove (C. N. O. & T. P.), Centerville, Cumberland Falls, Danville, Elihu, Elizabeth, Elmendorf, Eubank, Faulconer, Fenwick, Ferguson (C. N. O. & T. P.), Flat Rock, Floyd, Fonde, Fort Garrett, Geary, Georgetown, Greenwood, Hamilton, Hayden House, High Bridge, Hutchinson, Indiana Head, Junction City, Keene, Kenny (L. & N.), Kings Mountain, Lexington, Logans, McKinney, Marsh, Middlesboro, Midway, Milhon, Montrose, Moreland, Muir, Nealton, Newton, Nicholasville (L. & N.), Norwood, Paris (L. & N.), Paynes, Perry, Pinckhard, Pine Knot, Pulaski, Revillo, Richmond, Science Hill, Silverville, Sloans Valley, Somerset, South Fork, Stearns, Sunol, Tateville, Valley View, Waynesburg, Whitley, Whitlock, Wiberg, Winchester (L. & N.), Wright (L. & N.), Wyandotte, Yarnallton. Group B—Henderson, Louisville, Owensboro.

8183. Crushed stone and screenings. Greencastle, Ind., to stations on Louisville division of the P. R. R. Amity, Ind., to Sellersburg, Ind., inclusive, and stations on the St. Louis division of the P. R. R., Hagarstown, Ill., to Greenville, Ill., inclusive.

Western Trunk Line

2692A. Stone, crushed. Carload, from St. Louis, Mo., to Omaha, Neb. Present, 17 cents per 100 lb.; proposed, 13½ cents per 100 lb. Minimum weight 90 per cent of marked capacity but not less than 40,000 lb. (By shipper.)

3089A. Stone, crushed. Carload. From Quincy, Ill., to a few points representative of the situation:

To	Present Cents	Proposed Cents
North River	73	60
Palmyra Jct.	97	70
Monroe	109	80
Shelbina	122	90
Macon	134	110
Bucklin	146	120
Lewiston	109	80
Kirksville	110	100
Green City	146	120

Minimum weight 90 per cent of marked capacity of car, except when loaded to full visible capacity, actual weight will govern.

2051D. Stone, crushed, chats (lead or zinc mine refuse) and stone (rubble or rip rap). Carload. From Jasper, Pipestone, Quartzite, Minn., and Sioux Falls, S. D., to Oelwein, Ia., in connection with the C. G. W. R. R., via Clarion, Ia. Present, no through commodity rate in effect; proposed, 8½ cents per 100 lb. Minimum weight 90 per cent of marked capacity of car except when car is loaded to full visible capacity, actual weight will apply, but in no case less than 50,000 lb. (By shipper.)

Southwestern Freight Bureau

628. Stone, crushed. To establish rates on crushed stone, as described in Item 3792C, S. W. L. Trf. 26X, from Morris Spur and Lone Star, Tex., to the following Oklahoma points, based on the Shreveport, Texas, commercial scale: Terral, Ryan, Sugden, Waurika, Addington, Agawan, Ninnekah, Chickasha, Pocasset, Minco, Union City, El Reno, Banner, Yukon, Council City and Oklahoma City. It is claimed that the traffic cannot be moved on the present mileage scale, published in S. W. L. Trf. 26X.

449. Cement, hydraulic, portland or natural. To apply Scale 3 territory rates as prescribed in I. C. C. Docket 8182, on hydraulic, portland or natural cement, carload, minimum weight 50,000 lb., from points in Missouri, to Missouri Territory under the jurisdiction of the Southwestern Freight Bureau. The mileage scale of rates proposed were established for interstate application as reasonable and proper, and it is felt that the same charges should be made to apply on Missouri State Traffic.

THE following are the latest proposed changes in freight rates up to week beginning April 28:

Central Freight Association

8300. Sand and gravel. Cleveland, Ohio, to Johnstown, Penn. Present, 20 cents; proposed, $2.52 per net ton, on blast, engine, finishing, foundry, glass, loam, marl, molding and silica, and $2.30 per net ton on gravel and all other kinds of sand.

8301. Crushed stone. Kenton, Ohio, to Toledo, Ohio. Present, $1 per net ton; proposed, 75 cents per net ton.

8302. Crushed stone. Keeport and Huntington, Ind., to Miami, Ind. Present, 87 cents per net ton, from Keeport and 97 cents per net ton from Huntington; proposed, 81 cents per net ton from Keeport and 91 cents per net ton from Huntington.

8312. Sand and gravel. Peru, Ind., to Burket and Rutland, Ind. Present, 12 cents; proposed, 80 cents per net ton.

8313. Sand and gravel. Beesons, Ind., to Marion, Ind. Present, 14 cents; proposed, 90 cents per net ton.

8314. Crushed stone. Sandusky, Ohio, to Millersburg, Ohio. Present, $1.10 per net ton; proposed, 90 cents per net ton.

8316. Sand, all kinds, and gravel. Massillon, Warwick and Pauls, Ohio, to Cleveland, Ohio. Present, 80 cents per net ton (Note 1), 92 cents per net ton (Note 2); proposed, 90 cents per net ton (Note 1), $1.04 per net ton (Note 2). Note 1: Applicable on shipments when loaded in open top equipment. Note 2: Applicable on shipments loaded in box-car equipment when ordered by shippers, if open-top cars are ordered and carriers furnish a box-car or cars on account of liability to furnish open equipment within six days, the open-car rates will apply.

8326. Crushed stone. Bluffton, Ind., and Bluffton, Ohio, to Ohio and Indiana. Present and proposed (per net ton).

To	From Bluffton, Ind. Pres.	From Bluffton, Ind. Pro.	From Bluffton, Ohio Pres.	From Bluffton, Ohio Pro.
Muncie, Ind.	$0.72	$0.70	$1.15	$0.90
DeSoto, Ind.	.88	.75	1.15	.90
Albany, Ind.	.88	.75	1.01	.90
Red Key, Ind.	.88	.75	1.01	.85
Blaine, Ind.	.99	.80	.88	.85
Portland, Ind.	.99	.80	.80	.80
Brice, Ind.	.99	.85	----	----
Ft. Recovery, Ohio	6th class	.85	----	----
Celina, Ohio	6th class	.90	----	----
Coldwater, Ohio	6th class	.90	----	----
St. Mary's, Ohio	6th class	.90	----	----

8338. Sand, blast, engine, foundry, glass, loam, molding or silica. Falconer and Kennedy, N. Y., to Erie and Meadville, Penn. Present, $1.89 to Erie and $1.04 per net ton to Meadville, Penn.; proposed, $1 per net ton.

8339. Crushed stone. Lima, Ohio, to Cleveland, Ohio. Present, 18 cents; proposed $1 per net ton.

8344. Sand and gravel. Columbus, Ohio, to Gloucester, Ohio. Proposed, 80 cents per net ton.

8345. Scrap iron or steel, having value for remelting purposes only, Ashtabula, Ohio, to Canton, Ohio. Present, $1.89 per gross ton; proposed, $2.27 per gross ton.

8347. Crushed stone. Fultonham, Ohio, to Ohio.

Destination	Present rate, cents	Proposed rate, cents
Alliance, Ohio	120	110
Belpre, Ohio	110	90
McCuneville, Ohio	80	70
Enterprise, Ohio	140	100
Logan, Ohio	.....	100
Nelsonville, Ohio	140	110
Floodwood, Ohio	.....	110
Hocking, Ohio	.....	110
Creola, Ohio	150	110
McArthur, Ohio	150	110
Dundas, Ohio	100	120
Hamden, Ohio	150	120
Wellston, Ohio	.....	120
Coalton, Ohio	.....	120
Jackson, Ohio	.....	120
Vinton, Ohio	.....	120
Kerrs, Ohio	.....	120

8357. (a) Crushed stone; (b) sand and gravel. From (a) Greencastle, Ind., (b) Kern, Ind., to stations on C. A. & S. R. R.. Present, 6th class; proposed, rates in cents per net ton.

C. A. & S. Main Line	Proposed* rates, cents	Proposed‡ rates, cents
Fair Oaks, Ind.	126	113
Kents, Ind.	126	113
Mount Ayr, Ind.	126	113
Julian, Ind.	126	113
Foresman, Ind.	126	113
Percy, Ind.	113	100
Goodland, Ind.	113	90
Wadena, Ind.	113	90
Lochiel, Ind.	113	90
Barce, Ind.	113	90
Swanington, Ind.	101	90
Oxford, Ind.	101	80
Pine Village, Ind.	101	80
Chatterton, Ind.	101	80
Winthrop, Ind.	101	80
Kickapoo, Ind.	101	80
Glen Cliff, Ind.	101	80
Attica, Ind.	101	80
Rob Roy, Ind.	101	70
Aylesworth, Ind.	101	70
Stone Bluff, Ind.	101	70
Yeddo, Ind.	101	80
Kingman, Ind.	101	80
Tangier, Ind.	101	80
West Union, Ind.	101	80
West Melcher, Ind.	101	80

*From Greencastle, Ind. ‡From Kern, Ind.

8359. Sand and gravel. Elliston, Ind., to Plummer, Lester, Newberry and Elinora, Ind. Present, 66 cents per net ton; proposed, 60 cents per net ton.

8360. Crushed stone. White Sulphur, Ohio, to Ontario, Condon and Mansfield, Ohio. Present, 6th class; proposed, 90 cents per net ton.

8361. Sand and gravel. Mechanicsburg, Gravel Pit, Ohio, to Lorain, Ohio. Present, 6th class; proposed, 90 cents per net ton.

8362. Crushed stone screenings, for agricultural purposes. Greencastle, Ind., to Auburn, Ind. Present, 19½ cents; proposed, $1.26 per net ton.

8363. Crushed stone. White Sulphur, Ohio, to Marengo, Ohio. Present, 6th class; proposed, 80 cents per net ton.

8364. Gravel and sand (except blast, engine, foundry, glass, molding or silica). Silverwood, Ind., to Illinois. Present, 6th class.

To	Proposed per net ton
Rochester, Ill.	$1.13
Berry, Ill.	1.13
Breckenridge, Ill.	1.13
Edinburg, Ill.	1.13
Sharpsburg, Ill.	1.13
Taylorville, Ill.	1.13

Velma, Ill.	1.13
Owaneco, Ill.	1.13
Millersville, Ill.	1.13
Pana, Ill.	1.01
Tower Hill, Ill.	1.01
Lakewood, Ill.	1.01
Holliday, Ill.	1.13
Beecher City, Ill.	1.13
Moccasin, Ill.	1.13
Altamont, Ill.	1.13
Gilmore, Ill.	1.13
Edgewood, Ill.	1.13
Iola, Ill.	1.13
Riffle, Ill.	1.13
Louis, Ill.	1.13
Flora, Ill.	1.13

8368. Crushed stone and crushed stone screenings. Holland, Ohio, to Moats, Ohio. Present, 90 cents per net ton; proposed, 80 cents per net ton.

8369. Gravel and sand (other than blast, engine, foundry, glass, loam, molding or silica). Ambridge, Penn., to Hays, Penn. Present, $1.05 per net ton; proposed, 90 cents per net ton.

8381. Crushed stone. Monroe and Sibley, Mich., to Toledo, Ohio. Present, 60 cents per net ton; proposed, 62 cents per net ton from Monroe and 75 cents per net ton from Sibley, Mich.

Illinois Freight Association

2446. Crushed stone. Carloads, minimum weight 90% of marked capacity of car, proposed rates from Gladstone, Ill. (Jaynes Spur), e.g. in cents per net ton, to Ferndell, 101; Shale City, 101; Matherville, 110; Preemption, 120; Wagner, 120; Milam, 125; etc. Present basis: Class rates, Classification basis. Note: Cancels proposals under Docket 167 dated April 1, 1924.

2457. Lime. carloads from Marblehead and Quincy, Ill., and White Bear, Hannibal and White Rock, Mo., to Newton, Ill., via C. B. & Q. R. R. Present, via C. B. & Q. R. R., 16 cents per 100 lb.; via Missouri-Illinois R. R., 15½ cents per 100 lb. Proposed, via C. B. & Q. R. R., 15½ cents per 100 lb.

2458. Stone, crushed. Carloads, minimum weight 90% of marked capacity of car. from Thornton, Ill., to points on the T. P. & W. Ry. Present, to stations Weston to Peoria, $1.10; to stations Weston to El Paso, $2.30; to stations Secor to Peoria, $2.40; to stations Washington to Peoria, 60 cents. Proposed, 88 cents per net ton to Weston, to El Paso, Ill., inclusive and $1.01 to Secor to Peoria, Ill., inclusive.

1624. Cement, common hydraulic, natural or portland. Carloads, from Continental and Prospect Hill, Mo. (Rates in cents per 100 lb.):

To	Present	Proposed
Evansville, Ind.	11½	10
Louisville, Ky.	14½	10

Applicable on traffic destined to points in Kentucky.

Southern Freight Association

13445. Minimum carload weight on sand and gravel from Flomaton, Ala., and other L. & N. R. R. local stations in that vicinity to Mobile, Ala. Present minimum weight, "90% of marked capacity of car, except when cars are loaded to their visible capacity, actual weight shall govern." The proposed minimum is the same as that recently approved between other points in Southern territory.

13446. Cement. Carloads, from Birmingham, Ala., and group, Leeds, Ala., and Chattanooga, Tenn., to destinations named below. At the present time rate of 27½ cents is published from Birmingham, Ala., and group, to Alexandria, Va., Charlottesville, Va., and Washington, D. C. It is also proposed to establish the same rate to the following points: Basic, Buchanana, Va., Charleston, W. Va., Glasgow, Va., Hagerstown, Hagerstown district, Md., Harrisonburg, Lexington, Potomac Yard, Va., Shenandoah Junction, W. Va., Springwood, Staunton, Strasburg and Waynesboro, Va. It is also proposed to establish the same rate from Leeds, Ala., and Chattanooga, Tenn., to destinations named, as well as to Alexandria, Va., Charlottesville, Va., and Washington, D. C.

13453. Sand and gravel. Carloads, minimum weight 60,000 lb., from Spruce Pine, Ala., to Cherokee, Ala. Present, $1.30 per net ton; proposed, 80 cents per net ton. same as present rate from Spruce Pine to Riverton, Ala.: also in line with present rate to Wheeler and Hillsboro, Ala.

13501. Cement. Carloads, from Kingsport, Tenn., to Winchester, Ky., and L. & E. Junction, Ky., when for beyond. Present, 17 cents; proposed, 14 cents per 100 lb.. same as present proportional rate from Fordwick, Va.

13533. It is proposed to establish rates of $1.62 per net ton on slag. Carloads from LaFollette, Tenn., to Atlanta, Ga., made the same for the distance, as reflected in rates from and to other Southeastern points, in lieu of the Class "A" rate of 66½ cents per 100 lb.

13554. Gravel and sand. Carloads, from Mitylene, Ala., to Thomasville, Quitman, Tifton and Waycross, Ga. Montgomery, Ala., combination now applies. Proposed, to Thomasville, $1.49; Quitman, $1.53; Tifton, $1.67; Waycross, $1.71 per net ton. Basis: Same as from Montgomery, Ala.

13572. Cement. Carloads, from Birmingham, Ala., to Bowling Green, Ky. Present, 16 cents; proposed, 17 cents per 100 lb., same as rate from Boyles, Ala.

13581. Cement. Carloads, from Nashville, Tenn., to N. C. & St. L. Ry. Shelbyville, Sparta, and Tracy City branch stations. It is proposed to publish specific commodity rates made in line, distance considered, with present rates from Chattanooga and Richard City, Tenn., in lieu of the present Class M rates. The proposed revision will result in reductions as illustrated below. (In cents per 100 lb.) From Nashville, Tenn.:

To	Present	Proposed
Sparta branch:		
Clifty, Tenn.	21½	19½
Shelbyville branch:		
Shelbyville, Tenn.	15½	13½
Tracy City branch:		
Coalmont, Tenn.	22½	18

Southwestern Freight Bureau

658. Sand and gravel. To establish the following rates in cents per 100 lb. on sand and gravel, straight or mixed carloads, minimum weight, 80,000 lb. or marked capacity of car if less than 80,000 lb.. from Sledge, Texas, to points in Southwestern Arkansas specified below:

To station on the K. C. S. Ry.	Cents
Geo. C. Christman Spur, Ark., to Ogden Ark., incl.	4½
Walker Lumber Co. Spur, Ark., to Allene, Ark., incl.	5
Winthrop, Ark., to Prairie Oil & G. Co. Spur, Ark., incl.	6
DeQueen, Ark.	6½
To stations on the Mo. Pac. Ry.	
Post Pipe Spur, Ark., to Homan, Ark., incl.	4½
Clipper, Ark., to Hope, Ark., incl.	5
Chelsea, Ark., to Boughton, Ark., incl.	6
Britts, Ark., to Gurdon, Ark.	6½
Camden Branch Jct., Ark., to McBryde, Ark., incl.	6½
Reader, Ark., to Camden, Ark., incl.	7½
Tuscola Spur, Ark., to Urbana, Ark., incl.	8
Payne, Ark., to Strong, Ark., incl.	9
To stations on the St. L. S. W. Ry.	
Genoa, Ark.	4½
Artex, Ark., to Lewisville, Ark., incl.	5
Kress City, Ark., to Bradley, Ark., incl.	6
Arkana, Ark.-La., to Alden Bridge, La., incl.	6½
Benton, La., to Foster, La., incl.	7½
Stamps, Ark., to McNeil, Ark., incl.	6
Milner, Ark., to Graves, Ark., incl.	6½
Finn, Ark., to Camden, Ark.	7½

For the purpose of allowing the producers at Sledge, Texas, to compete at the southwestern Arkansas points mentioned it is contended that rates should be established slightly higher than those which would result from the 9702 scale for the distances from Sledge.

671. Cement plaster. To establish rates in cents per 100 lb. on cement plaster, carloads, minimum weight 80,000 lb., to Grand Rapids, Mich., and Gypsum, Ohio; from Cement, Ideal, Okeene and Southard, Okla., 31 cents. From El Dorado, Okla., 34 cents. Proposed change is claimed necessary to enable Oklahoma producers to enter more actively into competition with cement plaster producers located in Michigan and Ohio.

711. Cement plaster and articles taking same rates. To establish rate of 25½ cents per 100 lb., on cement plaster and articles taking same rates in Southwestern Lines' Trf. 3E. carload minimum weight 40,000 lb., from Plasterco Junction, Tex., to Ruston, La. Shippers contend that since this rate is in effect to Rayville and Tallulah it should also be established to Ruston.

749. Lime. To establish rate of 41 cents per 100 lb. on lime, carload minimum weight 30,000 lb., from Carey, Gibsonburg, Martin and Woodville, Ohio to Shreveport, Texarkana, Monroe, West Monroe, Alexandria and other Louisiana points, provided in Item 5687. Supplement 36, to S.W.L. Tariff 58-N. Proposed adjustment is claimed necessary to place rate on this traffic from the points named on a proper relation to rates from other points of origin to the same destinations.

770. Gravel. To establish rate of 5½ cents per 100 lb. on gravel, carload, minimum weight marked capacity of car, but not less than 50,000 lb., from St. Jo, Tex., to Grandfield, Okla. This adjustment contemplates establishing same rate from St. Jo, Tex., to Grandfield, Okla., as is now in effect in the opposite direction.

Western Trunk Line

3794. Stone, crushed, carload, from Minneapolis, Minn., to Dunlap, Iowa. Present, 16 cents; proposed, 12 cents. Minimum weight, 90% of marked capacity of car, but not less than 50,000 lb.

3808. Stone, crushed, carload, from Felch and Ishpeming, Mich., to Detroit, Mich. Present, 34 cents per 100 lb.; proposed, $4.08 per net ton. Minimum weight, 90% of marked capacity of car, but not less than 40,000 lb.

2051E. Stone, crushed, chats (lead or zinc mine refuse) and stone (rubble or rip rap). Carload from Jasper, Pipestone, Quartzite, Minn., and Sioux Falls, S. D., to Manchester, Iowa, via C. R. I. & P. Ry., Clarion, Iowa, C. G. W. R. R., Oneida, Iowa, M. & O. Ry. Present, no through commodity rate in effect; proposed, 11 cents per 100 lb. Minimum weight, 90% of marked capacity of car; except when car is loaded to full visible capacity actual weight will apply but not less than 50,000 lb.

2051F. Stone, crushed, chats (lead or zinc mine refuse) and stone (rubble or rip rap). Carload from Jasper, Pipestone, Quartzite, Minn., and Sioux Falls, S. D., to Oakland, Iowa. Present, 16 cents from all four points; proposed, 12 cents per 100 lb. Minimum weight, 90% of marked capacity of car; except when car is loaded to full visible capacity actual weight will apply but not less than 50,000 lb.

3812. Lime, plaster, stucco, etc. Carload between points in W.T.L. territory. Present rates are published in various individual line tariffs; proposed, to adjust rates so they will be not lower than applies on cement, hydraulic, portland or natural. Minimum weight, generally 30,000 lb., with certain exceptions in individual line tariffs.

New England Freight Association

6297. Crushed stone. (Trap rock), minimum weight 90% of marked capacity of car, but in no case less than 54,000 lb., from Westfield, Mass., to Boston, Mass., East Boston, Chelsea, Everett, East Cambridge, Cambridge, Cambridgeport, Brighton, Newton, Newtonville, West Newton, Auburndale, Wellesley, Natick, Framingham, Ashland, Cordaville, Southville, and Westboro, Mass., $1.10 net ton. Reason: To meet motor truck competition.

Trunk Line Association

11953. Cement. Carload 50,000 lb., except when for carrier's convenience car of less capacity is furnished, in which case minimum weight will be marked capacity of car furnished, but in no case less than 40,000 lb., from Security, Md., to P. R. R. stations, Salisbury, Md., to and including Cape Charles, Va., 18½ cents per 100 lb.

11954. Cement, common, hydraulic, natural or portland. Carload minimum weight 50,000 lb. from Lehigh district to N. Y. C. R. R. stations, Scarsdale to Putnam Junction, N. Y., including Dunwoodie, N. Y., to Nepperhan, N. Y., including Nepera Park, N. Y., Mt. Hope, N. Y., to Elmsford, N. Y., including East View, N. Y., Pocantico Hills, N. Y., Mahopac Falls, N. Y., and other points, 16 cents to 17½ cents per 100 lb.

Authorize Rate Cut

REQUEST of the L. & N. Railroad Co. for authority to publish reduced rates on sand and gravel from Montgomery to Talladega and from Montgomery to Anniston was approved by the Alabama Public Service Commission recently. The new rate on sand and gravel to Taladega will be 79 cents a ton; to Anniston, 90 cents a ton on sand and $1.02 a ton on gravel.

Lighted Lantern Explodes Oil Tank

THE growing use of fuel oil at plants renders it necessary to warn workmen of the danger of approaching oil tanks with a naked flame. The gases which arise from the oil are intensely inflamable and an "empty" tank is especially dangerous as is shown by the following from the Galveston, Texas, *News*:

Mike J. Callahan, an employe of the Uvalde Rock Asphalt Co., was severely burned about the head and face when an empty oil tank exploded on a railway switch.

According to ambulance men, Callahan had been pumping oil from the tank. He lowered a lighted lantern into the tank to see if it was empty and the gas inside exploded. At St. Joseph's Infirmary, he was reported in a critical condition.

The Rock Products Market

Wholesale Prices of Crushed Stone

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

Crushed Limestone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
EASTERN:						
Blakeslee, N. Y.	1.00	1.40	1.40	1.30	1.30	.....
Buffalo, N. Y.	1.50 per net ton all sizes					
Cobleskill, N. Y.	1.25	1.25	1.25	1.25	1.25	.....
Coldwater, N. Y.	1.50 per net ton all sizes					
Eastern Pennsylvania	1.35	1.35	1.45	1.35	1.35	1.35
Munns, N. Y.	1.00	1.40	1.40	1.30	1.40	.....
Prospect, N. Y.	.80	1.40	1.40	1.30	1.30	.....
Walford, Pa.	.....	.....	1.30	1.45	1.55	1.55
Watertown, N. Y.	.50	.....	1.75	1.50	1.50	1.50
Western New York	.85	1.25	1.25	1.25	1.25	1.25
CENTRAL						
Alton, Ill.	1.75	.....	1.75	1.50	.....	.....
Buffalo, Iowa	.90	1.35	1.25	1.15	1.25	1.25
Cypress, Ill.	1.20	1.35	1.35	1.20	1.20	1.10
Dundas, Ont.	.75	1.00	1.00	1.00	.90	.90
Gary, Ill.	1.10	1.40	1.10	1.10	1.10	1.10
Greencastle, Ind.	1.25	1.25	1.15	1.05	1.05	1.05
Lannon, Wis.	.80	1.00	1.00	.90	.90	.90
St. Vincent de Paul, P. Q.	.90	1.35	1.00	.90	.90	1.00
Sheboygan, Wis.	1.00	1.10	1.10	1.10	1.10	.....
Stone City, Iowa	.75	.....	1.40	1.30	1.25	.....
Toledo, Ohio	1.60	1.70	1.70	1.60	1.60	1.60
Toronto, Canada	1.90‡	2.25‡	2.25‡	2.25‡	2.00‡	2.00‡
Waukesha, Wis.	1.15	1.15	1.15	1.15	1.15	1.15
Youngstown, Ohio	.....	.....	1.30	1.55	1.55	1.55
SOUTHERN:						
Alderson, W. Va.	.60	1.60	1.60	1.50	1.40	.....
Bridgeport and Chico, Texas.	1.10	1.60	1.35	1.35	1.25	1.25
Cartersville, Ga.	1.75	1.50	1.50	1.15	1.15	1.10
El Paso, Texas	1.00	1.00	1.00	1.00	.....	.....
Graystone, Ala.	Crusher run with fines out, 1.00 per net ton					
Graysville, Ga.	1.00	1.00	.....	.85@1.00	.85@1.00	.....
Rock Crusher, Ky.	1.50	1.25	1.25	1.25	1.25	1.15
WESTERN:						
Atchison, Kans.	.50	2.10	2.10	2.10	2.10	1.60‖@2.00
Blue Spr'gs & Wymore, Neb.	.20	1.45	1.45	1.35@1.40	1.25@1.30	1.20
Cape Girardeau, Mo.	1.35	.....	1.25	1.25	1.00	.....
Kansas City, Mo.	1.00	1.65	1.65	1.65	1.65	1.65

Crushed Trap Rock

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Branford, Conn.	.60	1.60	1.35	1.15	1.00	.....
Duluth, Minn.	.90@1.00	2.25	1.90@2.00	1.40@1.50	1.35@1.40	1.35@1.40
Dresser Junction, Wis.	1.00	1.00	2.25	2.00	1.75	.....
El Cerrito, Calif.	1.75	1.75	1.75	1.75	1.75	.....
E. Summit, N. J.	1.50	2.00	1.80	1.40	1.40	.....
Eastern Massachusetts	.85	1.75	1.75	1.40	1.40	1.40
Eastern New York	.75	1.50	1.50	1.30	1.40	1.30
Eastern Pennsylvania	1.25	1.55	1.50	1.40	1.40	1.40
Meriden, Middlefield, New Britain, Rocky Hill, Conn.	.60	1.60	1.35	1.15	1.00@1.10	1.00
Oakland, Calif.	1.75	1.75	1.75	1.75	1.75	.....
Richmond, Calif.	.50	.....	1.50*	1.50*	1.50*	.....
San Diego, Calif.	.50@ .75	1.80@1.90	1.60@1.80	1.35@1.55	1.35@1.55	1.25@1.45
Springfield, N. J.	1.80	2.00	2.00	1.70	1.50	.....
Westfield, Mass.	.60	1.50	1.35	1.20	1.10	.....

Miscellaneous Crushed Stone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Columbia, S. C.	.50	.....	2.00	.....	1.60	.....
Eastern Penna.—Sandstone	1.25	1.55	1.45	1.25	1.25	1.25
Eastern Penna.—Quartzite	1.20	1.35	1.20	1.20	1.20	1.20
Lithonia, Ga.	.75	2.00	1.75	1.25	1.25	.....
Middlebrook, Mo.—Granite	3.00@3.50	.....	2.00@2.25	2.00@2.25	.....	1.25@2.00

*Cubic yd. †1 in. and less. ‡Prices include 90c freight. ‖Rip rap per ton.

Agricultural Limestone

(Pulverized)

Branchton, Pa.—100% thru 20 mesh; 80% thru 50 mesh; 60% thru 100 mesh (Four Leaf Clover Brand); sacks, 5.00; bulk	3.50
Hillsville, Pa.—Analysis, 94% $CaCO_3$, 1.40% $MgCO_3$, 75% thru 100 mesh; 94% thru 50 mesh; sacks, 5.00; bulk	3.50
Jamesville, N. Y. — Analysis, 89.25% $CaCO_3$; 5.25% $MgCO_3$; pulverized, bags, 4.00; bulk	2.50
Watertown, N. Y.—Analysis 96-99% $CaCO_3$; 0.02% $MgCO_3$—90% thru 100 mesh, bags, 4.50; bulk	3.00
Rockdale, Mass. — Analysis, 90% $CaCO_3$—50% thru 100 mesh; paper bags, 4.75; cloth, 5.25; bulk	3.25
North Pownal, Vt. — Analysis, 90% $CaCO_3$—50% thru 100 mesh; paper bags, 4.75; cloth, 5.25; bulk	3.25
West Stockbridge, Mass. — Analysis, 90% $CaCO_3$—50% thru 100 mesh; paper bags, 4.75; cloth, 5.25; bulk	3.25
Alton, Ill. — Analysis, 98% $CaCO_3$; 0.5% $MgCO_3$; 90% thru 100 mesh	4.50
Marblehead, Ohio — Analysis, 83.54% $CaCO_3$, 14.92% $MgCO_3$; 60% thru 100 mesh; 80-lb p. sacks 5.00; bulk	3.50
Piqua, Ohio—Total neutralizing power 95.3%; 100% thru 10, 60% thru 50; 50% thru 100	2.10@ 2.25
100% thru 10, 90% thru 50, 80% thru 100; bags, 5.00; bulk	3.50
100% thru 100, 85% thru 200; bags, 7.00; bulk	5.50
Mayville, Wis.	2.35
Knoxville, Tenn.—75% thru 100 mesh, bags, 3.95; bulk	2.70
Linville Falls, N. C.—Analysis, 57% $CaCO_3$, 39% $MgCO_3$; 50% thru 100 mesh; 200 lb. burlap bag, 4.00; bulk	2.75
Colton Calif.—Analysis, 95% $CaCO_3$, 3% $MgCO_3$—all thru 20 mesh—bulk	4.00

Agricultural Limestone

(Crushed)

Bettendorf, Iowa — 97% $CaCO_3$, 2% $MgCO_3$; 50% thru 100 mesh; 50% thru 4 mesh	1.50
Blackwater, Mo.—96% $CaCO_3$; 100% thru 8 mesh	1.00
Cape Girardeau, Mo.—Analysis, 93% $CaCO_3$, 3.5% $MgCO_3$; 90% thru 50 mesh	1.50
Cartersville, Ga. — Analysis, 60% $CaCO_3$; 38% $MgCO_3$ — all passing thru 10 mesh	1.50@ 1.75
Carthage, Mo. — Analysis, 98½% $CaCO_3$; 100% thru 10 mesh, 30% thru 100 mesh	1.75
Gary, Ill.—Analysis, 60% $CaCO_3$, 40% $MgCO_3$; 90% thru 100 mesh	1.10
Cypress, Ill. — Analysis, 96.12% $CaCO_3$, 2.5% $MgCO_3$; 50% thru 50 mesh	1.25
Kansas City, Mo.—50% thru 100 mesh	1.25
Moline, Ill.—97% $CaCO_3$, 2% $MgCO_3$ —50% thru 100 mesh; 50% thru 4 mesh	1.50

(Continued on next page)

Agricultural Limestone

(Continued from preceding page)

Lannon, Wis.—Analysis, 54% $CaCO_3$, 44% $MgCO_3$; 99% through 10 mesh; 46% through 60 mesh	2.00
Screenings (¼ in. to dust)	1.00
Marblehead, Ohio.—Analysis, 83.54% $CaCO_3$, 14.92% $MgCO_3$; 100% thru 4 mesh; 83% thru 10 mesh; bulk	1.25
Milltown, Ind.—Analysis, 91.95% $CaCO_3$, 4.87% $MgCO_3$; 36% thru 100 mesh, 43.2% thru 50 mesh	1.45@ 1.60
Monroe, Mich.—Analysis, 51.91% $CaCO_3$, 44.17% $MgCO_3$; agricultural limestone meal, 3/16 in. to dust, 30% thru 100 mesh	1.60
River Rouge, Mich.—Analysis, 54% $CaCO_3$, 40% $MgCO_3$; bulk	**.80@ 1.40**
Stone City, Iowa.—Analysis, 98% $CaCO_3$; 50% thru 50 mesh	**.75**
Bridgeport, Texas: Screenings from ⅛ in. down to flour	1.50
Chico, Texas: Screenings from ⅛ in. down to flour	1.50
Alderson, W. Va.—Analysis, 90% $CaCO_3$; 50% thru 100 mesh	1.50
Ft. Springs, W. Va.—Analysis, 90% $CaCO_3$; 50% thru 100 mesh	**1.50**

Miscellaneous Sands

Silica sand is quoted washed, dried and screened unless otherwise stated.

Glass Sand:	
Berkeley Springs, W. Va.	2.25@ 2.50
Cedarville, N. J.—Damp	1.75
Dry	2.25
Cheshire, Mass: 6.00 to 7.00 per ton; bbl.	2.50
Columbus, Ohio	1.50@ 1.75
Hancock, Md.—Damp	1.50
Dry	2.00
Mapleton, Pa.	2.25@ 2.50
Mapleton Depot, Pa.	2.25@ 2.50
Massillon, Ohio	3.00
Michigan City, Ind.	.50
Millville, N. J.	2.00
Mineral Ridge, Ohio	2.50
Ottawa, Ill.	1.25@ 1.50
Pacific, Mo.	2.25@ 3.00
Pittsburgh, Pa.—Dry	4.00
Damp	3.00
Ridgway, Pa.	2.50
Rockwood, Mich.	2.75@ 3.25
Round Top, Md.	2.25
San Francisco, Calif.	3.00@ 3.50
St. Louis, Mo.	1.50@ 3.00
South Vineland, N. J.—Damp	1.75
Dry	2.25
Thayers, Pa.	2.50
Utica, Ill.	1.25@ 1.50
Zanesville, Ohio	2.50
Foundry Sand:	
Albany, N. Y.: Molding fine, brass molding	2.50
Molding coarse	2.25
Sand blast	4.00
Arenzville, Ill.—Molding fine	1.50@ 1.70
Brass molding	1.75
Cheshire, Mass.—Furnace lining, molding fine and coarse	**5.00**
Sand blast	**5.00@ 8.00**
Stone sawing	**6.00**
Columbus, Ohio: Core	.30@ 2.00
Furnace lining	2.50
Molding coarse	1.75
Molding fine	2.00
Sand blast	3.50@ 5.00
Brass molding	2.50

(Continued on next page)

Wholesale Prices of Sand and Gravel

Prices given are per ton, f. o. b. producing plant or nearest shipping point

Washed Sand and Gravel

City or shipping point	Fine Sand, 1/10 in. down	Sand, ¼ in. and less	Gravel, ½ in. and less	Gravel, 1 in. and less	Gravel, 1½ in. and less	Gravel, 2 in. and less
EASTERN:						
Ambridge and So. Hts., Pa.	1.25	1.25	1.15	.85	.85	.85
Buffalo, N. Y.	1.10	.95	.....	.....	.85	.....
Farmingdale, N. J.	.48	.48	.75	.....	1.10	.....
Machias, N. Y.	.75	.75	.75	.75	.75	.75
Pittsburgh, Pa.	1.25	1.25	1.00	.85	.85	.85
Washington, D. C.—Rewashed, river	.75	.75	1.60	1.40	1.20	1.20
CENTRAL:						
Attica, Ind.	.75	.75	.75	.75	.75	.75
Barton, Wis.	.....	.50	.....	.70	.....	.70
Beloit, Wis.	.....	.70	.....	.....	.80	.....
Columbus, Ohio	.85	.85@1.20	.75	.75@1.00	.75	.75@ .90
Covington, Ind.	.75	.75	.75	.75	.75	.75
Des Moines, Iowa	.50	.50	1.25	1.60	1.60	1.60
			Unwashed ballast, .50 ton			
Eau Claire, Wis.	.40	.40	1.35	.....	.....	.85
Elkhart Lake, Wis.	.55	.40	.50	.50	.50	.50
Grand Rapids, Mich.	.50	.50	.....	.80	.....	.70
Hamilton, Ohio	.....	**1.00**	.....	.....	**1.00**	.....
Hersey, Mich.	.50	.50	.....	.....	.....	.75
Indianapolis, Ind.	.60	.60	.....	1.50	.75@1.00	.75@1.00
Janesville, Wis.	.....	.65@ .75	.....	.....	.65@ .75	.....
Mason City, Iowa	1.00	.45@ .55	1.35@1.55	1.45@1.55	1.45@1.55	1.45@1.55
Mankato, Minn.	.40a	.40	.50	.....	1.25	.....
Milwaukee, Wis.	**1.11**	**1.11**	**1.36**	**1.36**	**1.36**	**1.36**
Moline, Ill.	.60@ .80	.60@ .80	1.20@1.50	1.20@1.50	1.20@1.50	1.20@1.50
Moronts, Ill.	.50@ .80	.50@ .80	.60@ .90	.60@ .80	.60@ .80	.60@ .80
Oregon, Ill.	.50@ .80	.50@ .80	.60@ .90	.60@ .80	.60@ .80	.60@ .80
Ottawa, Ill.	.50@ .80	.50@ .80	.60@ .90	.60@ .80	.60@ .80	.60@ .80
Palestine, Ill.	.75	.75	.75	.75	.75	.75
St. Louis, Mo., f.o.b. cars	1.20	1.45	1.65§	1.45	.....	1.45‖
Silverwood, Ind.	.75	.75	.75	.75	.75	.75
Summit Grove, Ind.	.75	.75	.75	.75	.75	.75
Terre Haute, Ind.	.75	.60	.90	.90	.90	.85
Waukesha, Wis.	**.50**	**.50**	**.80**	**.80**	**.80**	**.80**
Winona, Minn.	.40	.40	1.25	1.10	1.00	1.00
Yorkville, Ill.	.50@ .80	.50@ .80	.60@ .90	.60@ .80	.60@ .80	.60@ .80
Zanesville, Ohio	.70	.....	.60	.....	.90	.....
SOUTHERN:						
Brookhaven, Miss.; Roseland, La.	.....	.50	.....	.....	.85	.....
Charleston, W. Va.	all sand 1.40 f.o.b. cars		all gravel 1.50 f.o.b. cars			
Knoxville, Tenn.	1.00	1.20	1.35	1.20	1.20	1.20
New Martinsville, W. Va.	1.00	1.00	1.20a	.....	.....	.80
WESTERN:						
Baldwin Park, Calif.	.....	.25@ .40	.50@ .70	.....	.50@ .70	.....
Kansas City, Mo.			Kaw river sand .75 per ton f.o.b. plants			
Los Angeles, Calif.	.70	.70	1.10@1.15	.....	1.10@1.15	.....
Pueblo, Colo.	1.10*	.90*	.....	1.75*	.....	1.60*
San Diego, Calif.	50@ .65	.80@ .90	1.40@1.50	1.20@1.30	1.00@1.10	1.00@1.10
Seattle, Wash. (bunkers)	1.50*	1.50*	1.50*	1.50*	1.50*	1.50*
Webb City, Mo. (flint)	.75	.75	.25@ .75b	.85b	1.25c	1.15c

Bank Run Sand and Gravel

City or shipping point	Fine Sand, 1/10 in. down	Sand, ¼ in. and less	Gravel, ½ in. and less	Gravel, 1 in. and less	Gravel, 1½ in. and less	Gravel, 2 in. and less
Boonville, N. Y.	.60@ .80	.....	.55@ .75	.....	.....	1.00
Brookhaven, Miss., Rosel'd, La.	.75	.50	.....	.....	1.25	.....
Dudley, Ky.‡	1.05	1.05	.....	1.00	.....	.....
Elkhart Lake, Wis.	.60	.50	.....	.....	.....	.....
Fishers, N. Y. (filter sand)	.75	.60@ .75	.....	.60	.....	.....
Gainesville, Texas	.....	.95	.....	.....	.....	.55
Grand Rapids, Mich.	.....	.....	.....	.50	.....	.....
Hamilton, Ohio	.....	.....	.....	.....	.70	.....
Hersey, Mich.	.....	.....	.....	.55	.....	.....
Indianapolis, Ind.			Mixed gravel for concrete work, .65			
Lindsay, Texas	.....	.....	.....	.....	.....	.55
Mankato, Minn.			Pit run gravel, .60			
Moline, Ill.	.60	.60	Concrete gravel, 50% G., 50% S., 1.00			
Montezuma, Ind.	.....	.....	.....	.....	.....	.60
St. Louis, Mo.	.....	.....	.....	.....	.....	1.35
Summit Grove, Ind.	.50	.50	.50	.50	.50	.50
Waukesha, Wis.	.60	.60	.60	.60	.60	.60
Winona, Minn.	.60	.60	.60	.60	.60	.60
York, Pa.	1.10	1.10	(crushed rock)			
Zanesville, Ohio	.....	.60	.....	.....	.....	.....

*Cubic yd.; †pebbles; §⅝ in. and less; ‡crushed rock; ‖2½ in. and less; (a) ¾ in. and less; (b) flint chats; (c) crushed flint.

Miscellaneous Sands

(Continued from preceding page)

Delaware, N. J.:		
Molding fine		2.00
Molding coarse		1.90
Brass molding		2.15
Dunbar, Pa.:		
Traction (Mill)		2.25
Eau Claire, Wis.:		
Sand blast		3.25
Traction		.40
Franklin, Pa.:		
Core		2.00
Furnace lining		2.50
Molding coarse		2.00
Brass molding		2.75
Joliet, Ill.:		
No. 2 molding sand and loam for luting purposes; milled		.85
Bank run		.65
Kasota, Minn.:		
Stone sawing (white glass sand)	1.50@	2.00
Mapleton Depot, Pa.:		
Molding coarse		2.25
Molding fine		2.50
Traction	2.00@	2.25
Roofing sand		2.25
Massillon, Ohio:		
Molding fine, coarse, furnace lining and core		3.00
Traction		2.50
Michigan City, Ind.:		
Core	.50@	.55
Traction		.40
Millville, N. J.:		
Core		2.00
Mineral Ridge, Ohio:		
Core, furnace lining, molding fine and coarse, roofing sand, sand blast, stone sawing, traction, brass molding (all green)		2.00
Montoursville, Pa.:		
Core	1.25@	1.40
Traction		1.10
Brass molding		1.40
New Lexington, Ohio:		
Molding fine		2.00
Molding coarse		1.50
Ottawa, Ill.:		
Crude silica sand	.85@	1.00
Core, furnace lining, steel molding		1.50
Roofing sand	1.50@	4.50
Sand blast		4.50
Ottawa, Minn.:		
Crude silica sand	.75@	1.00
Pacific, Mo.:		
Core, furnace lining	1.00@	1.25
Molding fine	.90@	1.00
Stone sawing	1.00@	1.75
Molding coarse	.85@	1.00
Ridgway, Pa.:		
Core		2.00
Furnace lining, molding fine, molding coarse		1.25
Traction		2.25
Rockwood, Mich.:		
Roofing sand		3.00
Sand blast		3.75
Round Top, Md.:		
Sand blast		2.25
Traction		1.75

Crushed Slag

City or shipping point		¼ in.	½ in.	¾ in.	1½ in.	2½ in.	3 in.
EASTERN:	Roofing	down	and less	and less	and less	and less	and larger
Buffalo, N. Y.	2.25	1.25	1.25	1 25	1.25	1.25	1.25
Eastern Penn. and Northern N. J.	2.50	1.20	1.50	1 20	1.20	1.20	1.20
Western Penn.	2.50	1.25	1.50	1.25	1.25	1.25	1.25
CENTRAL:							
Ironton, O.	2.05	1.45	1.45	1.45	1.45	1.45	1.45
Jackson, O.		1.30	1.30	1.30	1.30	1.30	1.30
Toledo, O.	1.50	1.35	1.50	1.35	1.35	1.35	1.35
Youngstown, Dover, Hubbard, Leetonia, Struthers, O.	2.00	1.25	1.35	1.35	1.25	1.25	1.25
SOUTHERN:							
Ashland, Ky.		1.55	1.55	1.55	1.55	1.55	1.55
Ensley, Ala.	2.05	.80	1.25	1.15	1.10	.95	.85
Longdale, Goshen, Glen Wilton, Roanoke, Ruesens, Va.	2.50	1.00	1.25	1.25	1.25	1.15	1.15

Lime Products (Carload Prices Per Ton F.O.B. Shipping Point)

	Finishing hydrate	Masons' hydrate	Agricultural hydrate	Chemical hydrate	Ground burnt lime, Blk.	Ground burnt lime, Bags	Lump lime, Blk.	Lump lime, Bbl.
EASTERN:								
Bellefonte, Pa.		10.50*	10.50*	10.50*	9.00		8.50	1.80
Buffalo, N. Y.				12.00				
Berkeley, R. I.			12.00					2.30
Lime Ridge, Pa.							5.00a	
Williamsport, Pa.			10.00				6.00	
York, Pa. (dealers' prices)		10.50	10.50	10.50			8.50	1.65b
CENTRAL:								
Cold Springs, Ohio		11.00	10.00		9.00	11.00‖	10.00	
Delaware, Ohio	12.50	10.00	9.00	11.00			9.00	1.60
Gibsonburg, Ohio	12.50				9.00	11.00	10.00	
Huntington, Ind.		11.00	10.00		9.00		10.00	1.60c
Luckey, Ohio	12.50‡							
Marblehead, Ohio		11.00	10.00				10.00	1.60d
Marion, Ohio		11.00	10.00				10.00	1.80†
Mitchell, Ind.		12.00	12.00	12.00	11.00		10.00	1.70c
Sheboygan, Wis.							9.50	
Tiffin, Ohio					9.00			
White Rock, Ohio	12.50				9.00	11.00		
Woodville, Ohio	12.50‡	11.00‡	9.50‡	13.50	9.00	10.00	9.00	1.60
SOUTHERN:								
Erin, Tenn.							8.00	1.25
El Paso, Texas							9.00	1.50
Graystone and Wilmay, Ala.	12.50	11.00				.67½g	8.50	1.50
Karo, Va.							7.00	1.50
Puntenny, Ariz.					10.00h	.90i	9.50h	1.70j
Staunton, Va.							1.50	
Varnons, Ala.	11.00	11.00	11.00	11.00		8.50	8.50	15.00f
Zuber and Ocala, Fla.	12.50		10.00				12.00	1.65
WESTERN:								
Colton, Calif.			15.00				19.70	
Kirtland, N. M.							15.00	
San Francisco, Calif.	22.00	22.00	15.00	22.00				2.50
Tehachapi, Calif.							13.00	2.10e

*Paper sacks; †180-lb. net, non-returnable metal barrel; ‡50-lb. paper bags, terms 30 days net, 25c per ton or 5c per bbl. discount for cash in 10 days from date of invoice; (a) f.o.b. kilns; (b) 180 lb. net, 2.65, 280 lb. net; (c) wooden bbl., steel bbl. 2.20; (d) wooden, 1.60, steel 1.80; (e) wooden bbl., steel bbl., 2.20; (f) ton; (g) per bag of 90 lb.; (h) to 12.50; (i) to 1.00 90-lb. sack, 25c credit if returned; (j) to 2.10.

Miscellaneous Sands

(Continued)

St. Louis, Mo.:		
Core	1.00@	1.75
Furnace lining		1.50
Molding fine	1.50@	2.50
Molding coarse	1.25@	1.75
Roofing sand		1.75
Sand blast	3.50@	4.50
Stone sawing	1.25@	2.25
Traction		1.25
Brass molding	2.00@	3.00
San Francisco, Calif.:		
(Washed and dried)—Core, molding fine, roofing sand and brass molding	3.00@	3.50
(Direct from pit)		
Furnace lining, molding coarse, sand blast		3.60
Stone sawing, traction		2.30
Tamalco, Ill.:		
Molding coarse	1.40@	1.60
Brass molding		1.75
Thayers, Pa.:		
Core		2.00
Furnace lining		1.25
Molding fine and coarse		1.50
Traction		2.00
Utica, Ill.:		
Core	.65@	1.25
Furnace lining	.75@	1.50
Molding fine	.65@	1.25
Molding coarse	.65@	1.25
Roofing sand		1.25
Sand blast		2.50
Stone sawing	1.25@	2.50
Traction		1.25
Brass molding	.65@	1.25
Warwick, Ohio:		
Core, furnace lining, molding fine and coarse (all green), 1.75; all dry		2.50
Traction		2.50
Zanesville, Ohio:		
Molding fine	1.50@	1.75
Brass molding	1.50@	1.75
Molding coarse		1.50
Furnace lining, molding steel		2.00
Traction		2.50

Talc

Prices given are per ton f.o.b. (in carload lots only), producing plant, or nearest shipping point

Baltimore, Md.:		
Crude talc (mine run)	3.00@	4.00
Ground talc (20-50 mesh), bags		10.00
Cubes		55.00
Blanks (per lb.)		.08
Pencils and steel workers' crayons, per gross		1.25
Chatsworth, Ga.:		
Crude talc (grindings)		4.00
Ground (150-200 mesh)	8.00@	12.00
Pencil and steel workers' crayons, per gross	1.10@	2.50
Chester, Vt.:		
Ground (150-200 mesh)	8.50@	10.00
Including bags	9.50@	11.00
Emeryville, N. Y.:		
(All air floated)—325 mesh, bags		14.75
200 mesh, bags		13.75
Henry, Va.:		
Crude talc (mine run) per 2000-lb. ton	2.75@	4.00
Ground (150-200 mesh), bags	8.50@	14.00
Keeler, Calif.:		
(150-200 mesh); carloads, 6000-lb. (bags extra)	18.00@	30.00
Marshall, N. C.:		
Crude (gray)	4.50@	5.00
Ground (60-80 mesh) (bags extra)	6.50@	7.50
Ground talc (150-200 mesh); bags	8.00@	12.00
Natural Bridge, N. Y.:		
Ground talc (300-325 mesh), 200-lb. bags	13.00@	15.00
Vermont:		
Ground talc (20-50 mesh); bags	7.50@	8.50
Ground talc (150-200 mesh); bags	10.00@	16.00
Waterbury, Vt.:		
Ground talc (20-50 mesh), bulk (Bags extra)	7.50@	10.00
Ground talc (150-200 mesh), bulk (Bags extra)	10.00@	22.50
Pencils and steel workers' crayons, per gross	1.20@	2.50

Rock Phosphate

(Raw Rock)

Per 2240-lb. Ton

Centerville, Tenn.—B.P.L. 65%, bags		8.50
Bulk		6.50
Gordonsburg, Tenn.—B.P.L. 68-72%	5.50@	6.50
Tennessee—F. O. B. mines, gross ton, unground Tenn. brown rock, 72% min. B.P.L.		5.50

(Continued on next page)

Roofing Slate

The following prices are per square (100 sq. ft.) for Pennsylvania Blue-Clay Roofing Slate, f. o. b. cars quarries:

Sizes	Genuine Bangor, Washington Big Bed, Franklin Big Bed	Genuine Albion	Slatington Small Bed	Genuine Bangor Ribbon
24x12	$10.20	$10.00	$8.10	$7.80
24x14	10.20	10.00	8.10	7.80
22x12	10.80	10.00	8.40	8.75
22x11	10.80	10.50	8.40	8.75
20x12	12.60	10.50	8.70	8.75
20x10	12 60	11.00	8.70	8.75
18x10	12.60	11.00	8.70	8.75
18x 9	12.60	11.00	8.70	8.75
16x10	12.60	11.00	8.40	8.75
16x 9	12.60	11.00	8.40	8.75
16x 8	12.60	11.00	8.40	8.75
18x12	12.60	11.00	8.70	8.75
16x12	12 60	11.00	8.40	8.75
14x10	11.10	11.00	8.10	7.80
14x 8	11.10	10.50	8.10	7.80
14x 7 to 12x6	9.30	10.50	7.50	7.80
	Mediums	Mediums	Mediums	Mediums
24x12	$ 8.10	$8.10	$7.20	$5.75
22x11	8.40	8.40	7.50	5.75
Other sizes	8.70	8.70	7.80	5.75

For less than carload lots of 20 squares or under, 10% additional charge will be made.

(Continued from preceding page)

(Ground Rock)

Mt. Pleasant, Tenn.—B.P.L. 65%; carloads, bulk	6.50
Less than carload lots	7.50
Twomey, Tenn.—B.P.L. 65%	6.50@ 7.50

Florida Soft Phosphate

(Raw Land Pebble)

Per Ton

Florida—F. O. B. mines, gross ton, 68/66% B.P.L.	2.25
70% min. B.P.L.	2.50
72% min. B.P.L.	2.75
75/74%	3.75
Jacksonville (Fla.) District	10.00@12.00

(Ground Land Pebble)

Per Ton

Jacksonville (Fla.) District	14.00
Add 2.50 for sacks.	
Morristown, Fla.—26% phos. acid	16.00

Fluorspar

Fluorspar—80% and over calcium fluoride, not over 5% silica; per ton f.o.b. Illinois and Kentucky mines	20.00@22.00
Fluorspar—85% and over calcium fluoride, not over 5% silica; per ton f.o.b. Illinois and Kentucky mines	22.00@23.50

Special Aggregates

Prices are per ton f. o. b. quarry or nearest shipping point.

City or shipping point	Terrazzo	Stucco chips
Barton, Wis., f.o.b. cars		10.50
Chicago, Ill.—Stucco chips, in sacks f.o.b. quarries		17.50
Easton, Pa.—Slate granules		7.00
Haddam, Conn. — Felstone buff	12.00	12.00
Harrisonburg, Va.—Blk. marble (crushed, in bags	12.50@18.00	12.50@18.00
Ingomar, Ohio (in bags)		4.00@20.00
Mertztown, Pa. (granite) bags, $10.00; bulk		8.00
Milwaukee, Wis. (del.)		16.00@30.00
Newark, N. J.—Roofing granules		7.50
New York, N. Y.—Red and yellow Verona		32.00
Middlebrook, Mo.—Red		25.00@30.00
Phillipsburg, N. J.—Evergreen, bulk	8.00@10.00	8.00@10.00
Creme and royal, bulk	15.00@20.00	15.00@20.00
Red Granite, Wis.		7.50
Sioux Falls, S. D.	7.50	7.50
Tuckahoe, N. Y.—2000 lb.		8.00@12.00
Whitestone, Ga.—White marble chips, net ton in bulk, f.o.b. cars, granite	4.50@ 6.00	4.50@ 6.00

Concrete Brick

Prices given per 1000 brick, f.o.b. plant or nearest shipping point.

	Common	Face
Appleton, Minn.	20.00	25.00@35.00
Carpenterville, N. J.	23.00	31.50@41.50
Ensley, Ala. ("Slagtex")	11.50	22.50@33.50
Friesland, Wis.	21.00	32.00
Omaha, Neb.	18.00	30.00@40.00
Portland, Ore. (Del.)	21.00	45.00@55.00
Puyallup, Wash.	20.00	30.00@75.00
Rapid City, S. D.	18.00	25.00@40.00
Salem, Ore.	23.00	35.00@75.00
Watertown, N. Y.	18.00@21.00	32.00@35.00
Wauwatosa, Wis.	15.00@16.00	28.00@75.00
Winnipeg, Can.	15.50	

Sand-Lime Brick

Prices given per 1,000 brick f. o. b. plant or nearest shipping point, unless otherwise noted.

Barton, Wis.	10.50
Boston, Mass.	15.00@16.50
Dayton, Ohio	12.50@13.50
Grand Rapids, Mich.	11.00
Jackson, Mich.	13.00
Lancaster, N. Y.	13.00
Michigan City, Ind.	11.00
Milwaukee, Wis. (delivered)	13.50
Plant City, Fla.	10.00@15.00
Portage, Wis.	15.00
Rives Junction and Saginaw, Mich.	12.00
Saginaw, Mich.	12.00
San Antonio, Tex.	12.50@14.00
Syracuse, N. Y. (delivered at job)	20.00
F.o.b. cars	17.00

Gray Klinker Brick

El Paso, Texas	13.00

Lime

Warehouse prices, carload lots at principal cities.

	Hydrated, per Ton Finishing	Common
Atlanta, Ga.	22.50	14.00
Baltimore, Md.	24.25	17.85
Cincinnati, Ohio	16.80	14.30
Chicago, Ill.	20.00	20.00
Dallas, Tex.	20.00	.....
Denver, Colo.	24.00	.....
Detroit, Mich.	22.00	20.00
Minneapolis, Minn. (white)	25.50	21.00
Montreal, Que.	21.00	21.00
New York, N. Y.	18.20	13.10
St. Louis, Mo.	20.00	19.00
San Francisco, Calif.	22.00	.....
Seattle, Wash. (paper sacks)	24.00	.....

Portland Cement

Prices per bbl. and per bag net in carload lots.

	Per Bag	Per Bbl.
Atlanta, Ga.	.....	2.60
Boston, Mass.	.....	2.63@3.03†
Buffalo, N. Y.	.....	2.48@2.88†
Cedar Rapids, Iowa	.60	2.40
Cincinnati, Ohio	.61¼	2.47
Cleveland, Ohio	.59¾	2.39
Chicago, Ill.	.55	2.20
Columbus, Ohio	.....	2.44
Dallas, Texas	.53¼	2.15
Davenport, Iowa	.59¾	2.39
Dayton, Ohio	.....	2.45
Denver, Colo.	.63¾	2.55
Detroit, Mich.	.60	1.995@2.40
Duluth, Minn.	.54¾	2.25
Indianapolis, Ind.	.60¼	2.41
Kansas City, Mo.	.66¾	2.37
Los Angeles, Cal. (less 5c dis.)	.68	3.08
Memphis, Tenn.	.....	2.60
Milwaukee, Wis.	.58¾	2.35
Minneapolis, Minn.	.60½	2.42
Montreal, Canada (sks. 20c ext.)	.....	2.25
New Orleans, La.	.....	2.90
New York, N. Y.	.....	2.25@2.65†
Philadelphia, Pa.	.....	2.41@2.81†
Phoenix, Ariz.	.82½	3.30
Pittsburgh, Pa.	.54¾	2.19
Portland, Ore.	.....	3.05
San Francisco, Cal.	.....	2.61*
St. Louis, Mo.	.57½	2.30
St. Paul, Minn.	.60½	2.42
Seattle, Wash. (10c bbl. dis.)	.....	2.90
Toledo, Ohio	.61¼	2.005@2.45*

NOTE—Add 40c per bbl. for bags.
*5c cash disc. 10 days.
†Prices to contractors, including bags.

Mill prices f. o. b. in Carload Lots to Contractors

	Per Bag	Per Bbl.
Buffington, Ind.	.48¾	1.95
Concrete, Wash.	.....	2.60
Dallas, Texas	.....	2.00
El Paso, Tex.	.70	2.08*
Hannibal, Mo.	.....	1.95
Hudson, N. Y.	.....	2.05
Leeds, Ala.	.....	1.95
Los Angeles, Calif.	.....	2.65
Louisville, Ky.	.....	2.35
Northampton, Pa.	.....	1.95
Phoenix, Ariz.	.....	4.30†
Steelton, Minn.	.50	2.00
Universal, Pa.	.48¾	1.95

*Gross, 10c sacks and 10c per bbl. disc 10 days.
†Gross, 15c sacks and 5c per bbl. disc. 10 days.

Gypsum Products—CARLOAD PRICES PER TON AND PER M SQUARE FEET, F. O. B. MILL

	Crushed Rock	Ground Gypsum	Agricultural Gypsum	Stucco Calcined Gypsum	Cement and Gauging Plaster	Wood Fiber	White Gauging	Sanded Plaster	Keene's Cement	Trowel Finish	——Plaster Board—— ¼x32x36" Weight 1500 lb. Per M Sq. Ft.	⅜x32x36" Weight 1850 lb. Per M Sq. Ft.	Wallboard, ⅜x32 or 48" Lengths 6'-10', 1850 lb. Per M Sq. Ft.
Black Hawk, S. D.	3.50	.....	7.00	8.00	10.00	10.50	.....	.....	.....	.....	.....	.....	.....
Denver, Colo.	.....	.....	.....	11.80	.....	.....	.....	.....	.....	.....	.....	.....	.....
Douglas, Ariz.	.....	6.00	6.00	.....	13.00	.....	.....	.....	.....	.....	.....	.....	.....
Fort Dodge, Iowa	3.00	3.50	6.00	8.00	10.00	10.50	20.00	.....	21.30	20.00	20.00	.....	30.00
Garbutt, N. Y.	.....	.....	6.00	8.00	10.00	10.00	.....	7.00	.....	.....	.....	20.00	.....
Grand Rapids, Mich.	2.75	6.00	6.00	7.25@10	10@11	10@11	.....	.....	30.00	.....	22.00	23.00	30.00
Hanover, Mont.	4.50	.....	6.00	10.00	.....	10.50	.....	.....	.....	.....	.....	.....	.....
Mound House, Nev.	.....	8.50	6.50	10.50@11.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oakfield, N. Y.	3.00	4.00	6.00	8.00	10.00	10.00	20.20	7.00*	30.75	21.00	19.37	20.00	30.00
Port Clinton, Ohio	3.00	4.00	6.00	8.00	10.00	10.00	.....	7.50	.....	.....	.....	20.00	30.00
Portland, Colo.	.....	.....	.....	10.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Francisco, Calif.	.....	12.00	12.00	15.40†	.....	.....	16.40‡	.....	.....	.....	.....	.....	.....
Winnipeg, Man.	5.50	5.50	7.00	13.50	15.00	15.00	.....	.....	.....	.....	28.50	.....	35.00

NOTE—Returnable Bags, 10c each; Paper Bags, $1.50 per ton extra (not returnable).
*Sanded Wood Fiber $2.50 per ton additional; †CL.; LCL., $16.50; ‡finishing, CL.; LCL., $17.50.

Production of Stone in 1923

Largest Recorded Output Made

ABOUT 107,200,000 tons of stone, valued at $161,600,000, was produced in the United States in 1923, according to an estimate given out by the Department of the Interior, made from figures compiled by the Geological Survey. These figures show an increase of about 34% in quantity over the output made in 1922 and an increase of nearly 17% over the largest recorded output—that made in 1916. The estimated total value is 32% greater than that for 1922 and is the largest on record, although the average unit value was less than that in 1920.

There was a fairly active demand during the year for all kinds of stone. The only product that apparently showed a decrease in output was stone sold for flagging. The final figures for this product may, however, show a slight increase, as its use for decorative walks and pavements around houses and gardens has recently been much favored by architects.

The conditions at the quarries were better in 1923 than in 1922. There were practically no strikes in 1923, and more cars were available for transportation, especially of crushed stone, than for several years. Labor was scarce and wages were high, yet the cost of quarrying apparently remained about the same. The average prices were slightly lower than in 1922.

Increase in Sale of Nearly All Kinds of Stone

The demand for building stone was fairly good, the increase in the quantity sold being about 22% in 1923 as compared with about 43% in 1922. The output of granite, which was small in 1922 on account of strikes in the quarries and in the cutting shops, showed an increase of about 30% in 1923. Marble sold for use as building stone apparently increased 12%, sandstone 18% and limestone 21%.

The output of monumental stone, which showed only a small increase in 1922 (about 7%), increased about 64% in 1923. The output of marble for this use increased about 27% and that of granite increased about 80% over that in 1922, when it was very small, especially in New England. The greatest increase, about 150%, was made in Vermont, but the increase in the rest of the country was more than 50%.

The quantity of stone sold for use as paving blocks increased about 48% in 1923. Over 50% more granite paving blocks were sold and about 13% more sandstone blocks.

The sale of curbstone increased about 44%, but that of flagstone decreased slightly. The sale of stone for riprap and rubble apparently increased in 1923. The use of rubble and ashlar stone for churches and for facing residences, walls, etc., was continued in 1923.

Crushed Stone More Than Half

The sale of crushed stone, which represents more than half the stone quarried, is estimated at 66,000,000 short tons in 1923, an increase of about 33% over 1922. The quantity of crushed stone sold for use as railroad ballast increased about 76%, and that of stone sold for use as road metal and in concrete for construction and road work increased about 25%.

The use of fluxing stone, which, on account of the revival of the metal industry, increased 74% in 1922, showed a further increase of about 46% in 1923. The quantity sold for this use in 1923 was about 27,730,000 short tons.

The quantity of dolomite, quartzite and mica schist sold as refractory material increased more than 25%, and that of other stone, chiefly limestone, sold for use in the chemical industries also increased.

The quantity of pulverized limestone sold for use in liming farm land was about 1,500,000 short tons, an increase of 25% over the quantity sold in 1922. The accompanying table shows the estimated quantity and value of each kind of stone sold in 1923, which are placed beside the figures for 1922 for comparison. It is notable that the increase has been distributed throughout the various branches of the industry showing a gain in all lines.

STONE SOLD IN THE UNITED STATES IN 1922 AND 1923

Use	1922 Quantity	1922 Value	Estimate for 1923 Quantity	Estimate for 1923 Value
Building stone, cubic feet	24,262,250	$ 25,749,398	29,600,000	$ 34,150,000
Approximate equivalent in short tons	1,929,260	.....	2,340,000	.....
Monumental stone, cubic feet	2,974,920	10,567,110	4,863,000	17,670,000
Approximate equivalent in short tons	248,270	.....	407,000	.....
Paving blocks, number	31,208,800	2,685,234	46,070,000	33,980,000
Approximate equivalent in short tons	326,290	.....	481,000	.....
Curbing, cubic feet	2,867,800	2,137,193	4,138,000	2,856,000
Approximate equivalent in short tons	236,030	.....	340,000	.....
Flagging, cubic feet	650,590	406,731	628,000	476,000
Approximate equivalent in short tons	53,580	.....	52,000	.....
Rubble, short tons	632,100	947,680	800,000	1,200,000
Riprap, short tons	2,048,580	1,768,939	2,200,000	1,800,000
Crushed stone, short tons	49,763,740	54,130,177	66,000,000	67,000,000
Furnace flux (limestone and marble), long tons	16,712,500	14,247,024	24,400,000	22,700,000
Equivalent in short tons	18,718,000	.....	27,730,000	.....
Refractory stone (ganister, mica schist and dolomite), short tons	902,170	1,136,236	1,131,000	1,548,000
Manufacturing industries (limestone and marble), short tons	3,586,250	3,414,073	.....	.....
Other uses, short tons	1,767,290	4,877,133	5,720,000	8,500,000
Total (quantities approximate, in short tons)	80,211,560	$122,066,928	107,200,000	$161,600,000

New Life for Oklahoma Lime Plant

THE LIME PLANT formerly operated by the Grand River Lime Co., with offices at Muskogee, Okla., has been taken over and rehabilitated by the Hellams-Tummel Lime Co. of that city. The plant, which consists of one kiln of standard construction, equipped for wood burning, is located about two miles north of Ft. Gibson on the Frisco railway at Keough, Okla., on the Grand river.

The plant was last operated in the year 1918 and produced a high grade of building lime, analyzing 97.25% which was used very extensively at that time in this locality. There are letters on file commenting very favorably as to its excellent quality from various builders and contractors. This lime was used for plaster finish in the Muskogee high school building and in the brick work on the convention hall building at Tulsa, Okla.

The limestone, which is quarried from a ledge estimated to be about 60 ft. deep and extends about 100 ft. on the company's property, is brought down to the kiln on elevated tramway cars of about ½-yd. capacity, using, at present, two cars on double tracks, connected with cable in such manner as to have the loaded quarry car pull the empty car back to loading chute. The contents of the cars are automatically dumped into the kiln, thus eliminating labor in doing this work.

Adequate shed room has been provided for storage of cooperage and lime as well as a cooling and loading platform. The plant is located on the main line of the Frisco railway with spur track near the plant, excellent shipping facilities are assured.

Operation of the plant is expected to be resumed within the next week, or as soon as a sufficient supply of oak wood, of which there is a plenteous supply near the plant, may be secured. It is expected at this time to burn some coal with this wood and later equip the plant for steam and burn coal entirely. The plant being located on the Grand river warrants an adequate supply of good water for this purpose.

Excellent shipping facilities are assured with connections with three railways at Muskogee, Okla., about 12 miles distant, which city is the shipping center of this section of the state, and with one railway at Ft. Gibson. As this is the only lime plant in this section of the state of Oklahoma the new owners are confident of the success of the company.

J. E. Hellams and C. W. Tummel are the proprietors.

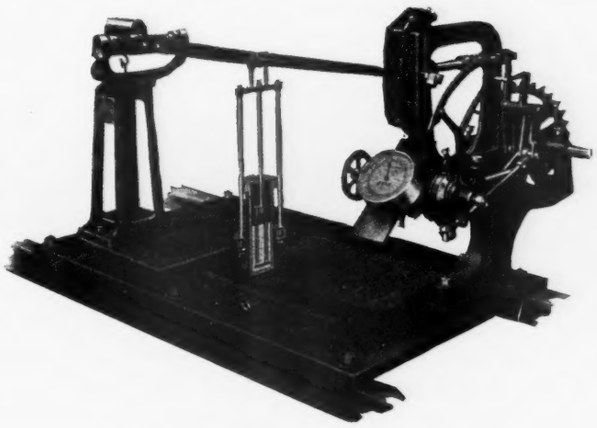
New Machinery and Equipment

Automatic Weighing Device

THE Automatic Weighing Corporation, with offices in the Hudson Terminal, 50 Church street, New York, are United States distributors for the Blake-Denison automatic weighing and recording machines. These machines are at the present time manufactured by the house of Samuel Denison & Son, Ltd., Leeds, England.

The president of the Automatic Weighing Corporation, H. D. Bowman, who has been identified with the automatic weighing industry for many years, speaking of the Blake-Denison, said: "The Blake-Denison, in my judgment, comes well within the 100% class of automatic scales because it can be easily applied to any new or old system of material transportation except a screw conveyor, and it is the only machine of the type which divides the weighing and the recording into two separate operations which are governed by two distinct mechanisms. The poise or weigh lever is entirely free to balance against each load as it passes over a predetermined section or length of the belt or bucket conveyor or monorail as the case may be. There exists with the use of this method several distinct advantages. The irregular loading of the conveyor system does not affect the accuracy of the recorded weights. On a level installation, for example, we are able to quote and maintain an accuracy within one-half of 1%; in fact, the machine is guaranteed to so operate.

"In a recent installation the machine recorded within an accuracy of one-eighth of 1%. Also with this weigher no material can be recorded twice and none can pass unweighed. The machine is a legal weighing instrument in Great Britain and the Colonies, which to those who are familiar with the close restrictions imposed in England, means much."



Automatic weighing machine of British manufacture

One-Man Shovel

A NEW gasoline-engine-powered shovel with crawler treads has been placed on the market by the Michigan Dredge Co., Bay City, Mich. It is described by the following specifications:

Capacity—Dipper, ½ yd.

Boom—The boom is built up of two main extra heavy channels, these channels are bolted together with wood spreaders between. The crowding device is controlled by cables. Length of dipper stick 14 ft. 6 in. Length of boom channels, 17 ft.

Drum Shaft—The hoist drum is loosely mounted on shaft and independently driven through screw ram in end of hoist shaft. The driving clutches are of the square jaw type.

Treads—The treads are 18 in. wide with 1 7/16 in. diameter pins. Tread rollers 8 in. diameter and bronzed bushed.

Frame—Made up of fabricated structural steel. The ring gear is a steel casting with base full size of structural frame and securely riveted to the frame. The turntable is a steel casting and is supported upon the ring gear with 8-in. diameter rollers, bronzed bushed.

Power Plant—Heavy duty engine with ample power, the drive from engine to machinery is by a heavy duty silent drive chain.

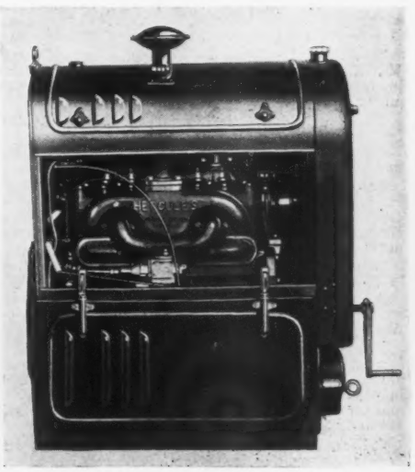
New crawler-tread shovel especially designed for one-man operation

Gasoline Power Unit

A POWER UNIT especially adapted for operating hoists, air compressors, pumps and other machinery and equipment, both portable and permanent, used in the rock products industry is illustrated herewith. This unit develops from 2 0to 40 hp. at from 800 to 1800 r.p.m.

This unit has 4-in. cylinders with 5-in. stroke and a 15-gal. gasoline tank. A disc type clutch with power take-off shaft 1¾ in. in diameter by 4⅝ in. long is optional with reduction gears. Gears and shafts are alloy steel. All shafts run on Timken tapered roller bearings. Reduction gears permitting 2 to 1 3 to 1 and 4 to 1 are optional. With reduction gears a power take-off shaft 2¼ in. in diameter and 6 in. long may be arranged to run in either direction. Electric lighting and starting equipment is optional with the purchaser.

This unit is made by the Hercules Motors Corp., Canton, Ohio, which manufactures motors for 43 makers of motor trucks and as many other manufacturers of industrial equipment.



Gasoline-engine power unit for hoists, pumps, etc.

News of All the Industry

Incorporations

Eastern Sand-Lime Brick Co., Wilmington, Del., has been incorporated for $1,300,000 to manufacture lime, etc.

Bluestone Lime and Quartzite Mining Co., Salt Lake City, Utah, has been incorporated for $100,000. George W. Snyder is president.

Standard Gravel Co., Houston, Tex., has been incorporated for $25,000 by Frank Tamborello, C. J. Tamborello, and J. A. Tamborello.

B. & B. Concrete Co., Sioux Falls, S. D., has been incorporated for $25,000 by Bryant Bower and W. M. Bower.

Burton Lime and Cement Co., St. Louis, Mo., has been incorporated for $10,000. (Bryan Williams and Cave, attorneys, Pierce building.)

New Braunfels Limestone Co., New Braunfels, Tex., has been incorporated for $50,000 by Max A. Altgelt, Adolf Henne, Emil Fischer, and others.

Biltmore Concrete Co., Asheville, N. C., has been incorporated for $50.000 by W. H. Rainey, Charles Mannel, and others.

City Lumber and Building Material Co., Birmingham, Ala., has been incorporated by A. H. Mires, G. E. Coffman, and others.

Builders Supply Co., Cleburne, Tex., has been incorporated by D. F. Bellenger, R. O. Whitaker, and others and will handle lime and cement.

Klamath Falls Concrete Pipe Co., Klamath Falls, Ore., has been incorporated for $25,000 by C. H. Knowles, E. M. Morton, and others.

Crowell Fireproof Block Co., Kansas City, Mo., has been incorporated for $60,000 by H. H. Crowell, Paul M. Fogel, and others.

Degen's Cement Floors, Inc., 400 Penobscot building, Detroit, Mich., has been incorporated for $2500.

Henson Gravel Co., Sulligent, Ala., has been incorporated for $20.000 by Louis Shull, Jr., Brooks McGowan, and others.

Elizabeth Sand and Supply Co., Newark, N. J., has been incorporated for $50,000 by J. C. Manning to deal in building materials.

Hewlett Sand and Gravel Co., Lawrence, N. Y., has been incorporated for $50,000 by E. A. Edsell, F. R. Fisher, and H. A. Fluckiger (attorneys, Sprague, Morris & Fluckiger, Far Rockaway).

Ambi Proof Concrete Block Co., 17 Linwood avenue, Baltimore, Md., has been incorporated for $40,000 by Edward J. Weaver, Edward F. Elliott, and others.

City Sand Co., Knoxville, Tenn., has been incorporated for $5000 by Rob W. Findlay, R. W. Bell, John Hill, John C. Mikels, and H. E. Armstrong.

Adamant Quarry Co., Inc., Montpelier, Vt., has been incorporated for $200,000 to quarry and deal in granite by Harry Daniels, Clarence S. Whittier, and Ralph S. Daniels.

Concrete Products Co., Inc., Holyoke, Mass., has been incorporated for $50,000. Valdimere A. Montmeny, president and treasurer, 413 Pleasant street, Holyoke.

S. R. Knapp Co., 48 Rowena street, Detroit, Mich., has been incorporated for $50,000 to deal in building material, including lime, plaster, cement, etc.

Knoblaugh & Tuttle, Inc., Los Angeles, Calif., has been incorporated for $25,000 by Leslie D. Knoblaugh, Wm. H. Tuttle, and E. Earl Crandall to handle cement,

Stay White Co., Los Angeles, Calif., has been incorporated for $25,000 by Chester C. Cox of Los Angeles and Harry and Lola Houghland of Norwalk to manufacture cement and plaster products.

Wisconsin-Wilcox Co., Bradford, Wis., has been incorporated to deal in sand, gravel, stone, and other kindred products. Incorporators: John B. Sanborn, Ernest H. Pett, and Gladys Reynolds. Shares, 1000 without par.

Florida Diatomite Co., Clermont, Fla., has been incorporated and has purchased equipment for developing diatomite deposits. E. O. Young, Huntington, W. Va., president; H. C. Brown, general manager, and C. Lindley Wood, secretary and chemical engineer.

California Rock Co., San Francisco, Calif., has been incorporated for $200,000 by G. M. Clark, Z. L. Smith, Lee Frontz, P. C. Hansen, and others. The company purchased a site at Livermore, Calif., for a gravel plant. (Attorney, R. H. Cross, Mills building.)

Gomez Brothers & Co., Inc., Barre, Vt., has been incorporated for $10,000 to quarry, sell, and manufacture granite, marble, and other stones and to build and manufacture plants, etc. The incorporators, all of Barre, are: Manuel G. Fernando, Edwardo Gomez, and Serbando Higuera.

Mitchell Mineral Corp., Spruce Pine, N. C., has been incorporated for $10,000 to mine, quarry, mill, grind, manufacture, produce, buy, and sell minerals and mineral products. Incorporators: James J. McLaughlin and W. Lewis Smith, Johnson City, Tenn., and W. S. Renfro, Spruce Pine.

Sand and Gravel

Concha Washed Sand Co., Oklahoma City, Okla., has increased its capital stock from $10,000 to $25,000.

Wichita, Kans.—Charles Jeffries and James Roberts now have their new gravel plant in operation on the Jeffries farm, six miles south of Wichita, on the Seneca Street road.

Northeast Missouri Sand and Gravel Co., Peno creek near Frankford, Mo., is now operating its plant No. 1. Plant No. 2 near Silex is being equipped and will probably be operating soon.

Wyoming Rock Products Co., Casper, Wyo., recently took out a building permit for $3000 for the erection of a warehouse on C street near the Burlington industrial yards.

Keystone Sand and Supply Co., Pittsburgh, Penn., recently applied for a Federal permit to drive 35 piles at its unloading docks, McKeesport, on the right bank of the Monongahela river.

Ballinger, Tex.—The Abilene & Southern railroad will use 10,000 cu. yd. of gravel from the Colorado river here for ballasting their track between Ballinger and Abilene.

Perkins Sand and Rock Co., Los Angeles, Calif., has engaged in business at San Fernando road and Branford avenue. John H. Perkins, Carl W. Walser, and Samuel K. Applebaum are members of the firm.

Western Rivers Co., Point Pleasant, W. Va., of which C. F. McCulloch is manager, has increased its capital stock from $100,000 to $200,000 and will construct a sand and gravel plant with a capacity for 3000 tons a day.

Kickapoo, Ind.—Elwyn Winks and John H. Hardin, both of Williamsport, Ind., have leased the Douglas gravel pit at Kickapoo and will operate it this spring and summer. Mr. Winks has been in the employ of the Carmichael Gravel Co. for several years.

Menlo Park, Calif.—Completion of sand and gravel bunkers, at a cost of more than $30,000, was announced recently by Harry Morey, Jr., and William M. Fitzhugh, Jr., proprietors. The new plant is designed to turnish building material to all points in southern San Mateo county.

Stilwell Sand and Gravel Co.'s plant at the east edge of Anderson, Ind., will be kept operating to almost full capacity, according to newspaper reports which state that the Big Four railroad is planning to use an average of 20 cars a day from this plant for ballasting the tracks of the Michigan division.

Quarries

Beverly Stone and Sand Co., Beverly, S. C., recently set off its mammoth blast at its quarry that turns out principally crushed stone.

Medicine Rock, Calif.—Preparations are being made to open the quarry here within the next two months, or as soon as the contract for rock at the Minor quarry is completed.

Pfeiffer Stone Co., St. Joseph, Mo., has increased its capital stock in Arkansas to $165,560, according to newspaper reports. The Arkansas plant is at Pfeiffer.

Plymouth, Ill.—It is reported that a stone-crushing plant to cost about $150,000 is to be established near here by a syndicate now forming. J. J. Sullivan is to be superintendent.

Wabash Stone Co., Wabash, Ind., announces that work on its plant is progressing rapidly and the company expects to start operation the first part of May and will be ready to ship about June 1.

California Slimes Co., Jackson, Calif., has taken an option on the A. L. Wait marble quarries in the Willow Springs section, where there are deposits of both red and green marble. W. E. Darrow is president and general manager.

Southwest Products Co., Kansas City, Mo., assisted by the industrial department of the M. K. & T. railway, is making negotiations for land at Clifton City, five miles northwest of Tipton, for the purpose of opening a quarry for sand production.

Kingston, N. Y.—The directors of the Kingston Fair Grounds, Inc., have leased the stone quarry on the western part of the fair grounds property to the state of New York for three years. The quarry has been operated by the State Highway Department for several years.

Birdsboro Stone Co., Birdsboro, Penn., recently had its annual "big blast," in which about 500,000 tons of rock were broken from the face of the quarry. This is reported to be the largest displacement of hard texture rock in the annals of quarry blasting. William Kelly is general superintendent of the plant.

Service Rock Co., Fresno, Calif., recently organized, will expend about $200,000 in the construction of a rock-crushing plant in Friant, Calif. The officers are: D. Patterson, president; Sigmond Dorsmer, vice-president; B. H. Nelson, secretary and treasurer, and H. W. Jones, plant manager.

Indianapolis, Ind.—Joseph E. Hennings, chairman of the board of trustees of the Indiana reformatory, was here recently conferring with Governor McCray concerning the opening of a stone quarry on the reformatory grounds. The Big Four railroad is to be a purchaser of the stone if the quarry is opened.

Sparta, Ga.—The granite crushing industry of Granite Hill has been greatly curtailed for the past several weeks on account of car shortage. The crushed stone is shipped to all parts of the country for concrete and road work. The management expects to resume operations as soon as the cars can be secured.

Midwest Crushed Stone Quarries Co., Greencastle, Ind., which was destroyed by fire several months ago, has made considerable progress on reconstructing the plant but it will be about two months before the plant will be able to resume operations, it is stated. The foundation work has been completed and the steel framework of the mill is under way.

Perkins Sand and Gravel Co., San Fernando, Calif., is progressing with its work on what is reported to be the largest rock-crushing plant in the San Fernando valley. The company is said to hold patents to a valuable byproduct that will be turned out in addition to sand and crushed rock. C. W. Walser, president; John H. Perkins, vice-president and general manager, and S. K. Applebaum, secretary-treasurer.

Oak Grove, Mo.—It is reported that a rock quarry is to be established here by W. A. Ross, who has the contract for the construction of the state highway from the Lafayette county line to Kansas City. In establishing a quarry near the work here Mr. Ross will also probably furnish the material to be used in resurfacing the north and south rock road recently ordered by the county court. This should prove quite a saving to the county as local rock could be secured much cheaper than by having to haul or ship from the Spencer quarry at Independence.

Lime

Western Lime Co., Manitou, Colo., has recently completed the enlargement of its plant, the improvements costing about $20,000.

Marblehead Lime Co., Chicago, Ill., announces the removal of its general offices from 159 North State street to 160 North La Salle street.

Arkansas Lime Co., Batesville, Ark., is progressing on all buildings for the concern and much improvement is being made in and around the plant. A railroad trunk line will be built some time this summer for transporting the company's material to the main line. Mr. Weigart is general manager.

Cement

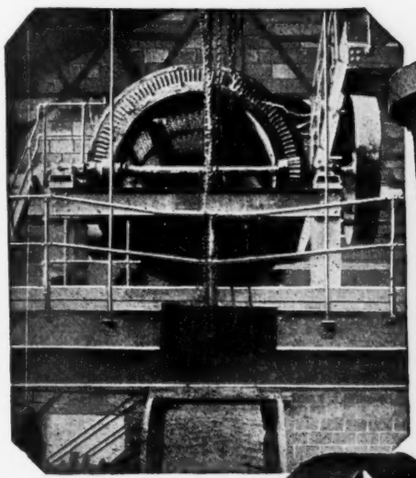
Security Cement and Lime Co., Hagerstown, Md., anounces the removal of its Baltimore office to the Citizens National Bank building, Light and Redwood streets.

Advance Waterproof Cement Co., Chicago, Ill., manufacturer of reground portland cement and hydro-corundum portland cement, has moved its office to 203 S. Dearborn st.

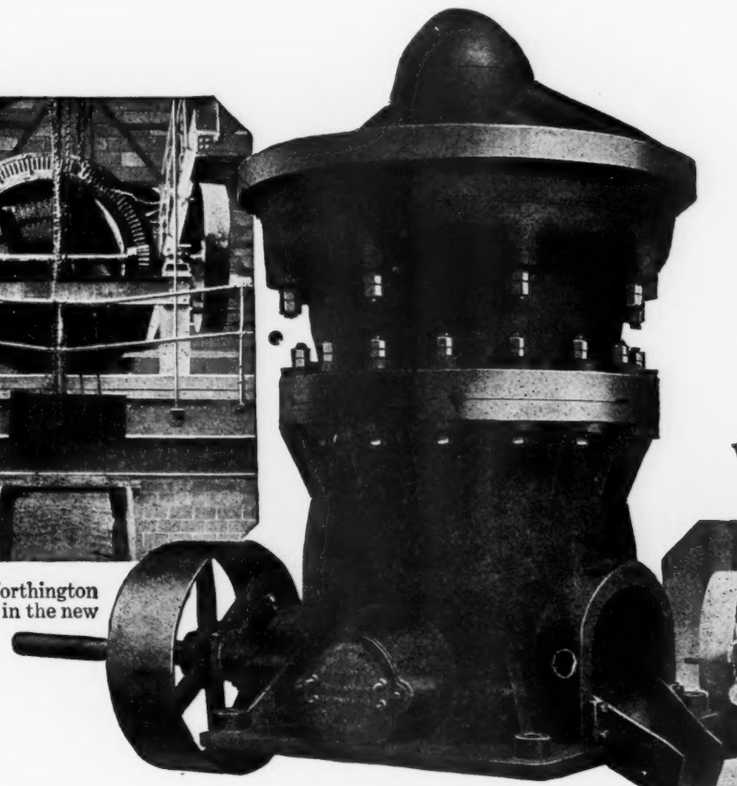
Worthington Crushers in the New Dixie Portland Cement Mill

The new mill of the Dixie Portland Cement Company, at Richard City, Tenn., has Worthington Superior McCully Gyratory Crushers.

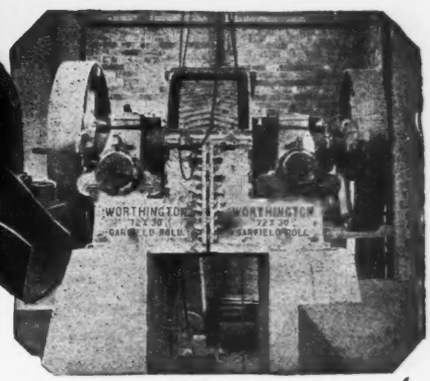
This plant is also equipped with screens and rolls made at the Worthington Power and Mining Works.



72" x 12' Worthington Rotary Screen in the new Dixie plant.



Superior McCully Gyratory Crusher.



Worthington-Garfield Roll installed in the new Dixie plant.

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Worthington Works *Harrison, N. J.*
Laidlaw Works *Cincinnati, Ohio.*
Hazleton Works, *Hazleton, Pa.*
Gas Engine Works, *Cudahy, Wis.*
Power & Mining Works *Cudahy, Wis.*
Snow-Holly Works *Buffalo, N. Y.*
Epping-Carpenter, *Pittsburgh, Pa.*

Ft. Wayne Cement Stone Co., Ft. Wayne, Ind., has changed its name to Jocquel-Schulz Co.

San Antonio Portland Cement Co., San Antonio, Tex., has plans in preparation for the erection of additions to its mill at Centerville estimated to cost about $100,000.

Krippendorf-Tuttle White Cliff Products Co., White Cliffs, Ark., is soon to begin the erection of a cement plant on its property at White Cliffs, near Nashville, Ark.

Missouri Portland Cement Co., Post-Dispatch building, St. Louis, Mo., is reported to be planning for extensions in its mills. The company recently arranged for an increase in capital to $5,950,000.

Titan Cement Co., Ridgeley, W. Va., has acquired 555 acres of land at Ackerman, with 10,000 ft. frontage on the Potomac river, and will construct a cement plant with daily capacity of 1200 bbl.

International Non-Staining Cement Co., exclusive representative of Lafarge cement in the United States, announces the removal of its offices from 103 Park avenue, New York City, to larger quarters at 21 East 40th street.

Old Mission Portland Cement Co., San Francisco, Calif., has appointed the Atlas Mortar Co. its exclusive distributor in San Francisco, and warehouse stocks will be carried at 569 10th street and St. Roses avenue and Collins street.

St. Cloud, Minn., Times reports the discovery of what appears to be a very large deposit of marl 20 miles east of St. Cloud in Glen Dorado township, Benton county. Underlying the marl is an extensive bed of limestone. It is reported that chemists at the University of Minnesota have declared the marl is suitable for the manufacture of cement.

International Cement Corp., New York City, according to newspaper reports, shows, for the fourth quarter of 1923, a net profit of $570,034, after reserve for Federal income taxes and contingencies, compared with $755,623 in the third quarter, $636,710 in the second quarter, and $460,-210 in the first quarter. This amount makes a total for the year of $2,422,577, after all charges, compared with a 1922 total of $1,425,047.

"Philadelphia Public Ledger" states that cement manufacturers report they are exceedingly busy. The open winter has been a good thing for them and the approach of good weather finds one manufacturer running 50% ahead of his business for March last year. Deliveries are prompt and mills are having no trouble in getting railroad cars. Summer demands for road building are starting and a larger business than last year is expected. The new plan of putting concrete shoulders on old patent roads is calling for thousands of barrels of cement. Increasing demand is coming through the new methods of making concrete roads thicker in the shoulders instead of uniform thickness. Prices of cement since the drop last October are holding firm. Collections are good. One manufacturer reports 65% of shipments made last month were discounted.

Concrete Products

Mission Concrete Co., San Francisco, Calif., has moved from 125 Kissling street to the Call building.

Keynote Manufacturing Co., Indianapolis, Ind., manufacturer of cement products, has moved its plant to 1402 Commerce street.

Brewer Brothers & Rose, 1456 16th street, Huntington, W. Va., have equipped a plant for the manufacture of Grantex, a new concrete product.

W. P. Rose Builders Supply Co., Kinston, N. C., has acquired a site with 125 ft. frontage and will erect a plant for the manufacture of concrete blocks.

Western Concrete Pipe Co., Los Angeles, Calif., has moved its plant and office to the City Industrial Tract, at Bridge and McKee streets, near Lincoln Park.

Hunt's Brick and Asphalt Co., 601 East Tremont avenue, New York, N. Y., is taking bids on the erection of a 100x200-ft. factory building to cost about $100,000. C. Breidenbach is owner.

Cement Products Co. was outzoned at Monrovia and the company will now locate in Arcadia, Calif., where property on 10th avenue has been purchased. Edwin F. Skedden is president of the company.

Special Aggregates

Hackmeister-Linn Co., Pittsburgh, Penn., has opened a stucco plant at Sarnia, Mich., at the foot of Vidal street.

Stockton, Calif.—Bull quartz, a heretofore useless material found in numerous places in the Sierra Nevada mountains, is now taking its place in the commercial world. The snowy white rock which has been considered an annoyance by many miners for intruding on apparently good mining claims and, in many instances cutting off a good lead, is now being sought to take a place in the world of building material, it is reported. The first deposit to be exploited in this county is now being opened up at Carson Hill by William Cortes. The material will be shipped to Stockton where it will be used in stucco work.

Silica Sand

Southwestern Products Co., Kansas City, Mo., will lease lands in the vicinity of Clifton City in the near future for mining silica and tripoli sands, according to a newspaper announcement. C. F. Clancy is president.

Santa Anna Texas.—A sand mountain whose silvering sides are being exported to Mexico to make bottles, fruit jars, and kindred vitreous wares gives employment to scores of men here. The fine silica in carloads has found its way to glass factories over the entire country. It is stated to be a superior grade of sand and would become more popular if it were not for the high freight rates. Viewed from a distance, it appears as the focal point for an attack of gigantic ants carrying grain by grain the golden flecks away. The numerous men take on the fancied aspect of ants. Avalanches of the sand are swept into troughs that pour it into wagons awaiting their turn to carry it to the railroad cars down in the track yards.

Phosphate Rock

Pacific Coast Phosphate Co., Seattle, Wash., is planning the establishment of a plant at Kelso, according to reports, for the manufacture of fertilizer to be made from phosphate rock mined by the company in Idaho. The plant will have machinery for grinding lime and phosphate rock and mixing it.

Manufacturers

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Our new phone number is Central 7750. Please change all your records to our new address and drop in to see us some time. You'll probably find some new people in our organization.

Announcement of removal of Russell T. Gray from Michigan avenue to Randolph and Wells streets, Chicago

Good Roads Machinery Co., Kennett Square, Penn., announces that in order to serve its New England trade better its Boston office has been moved to 36 Pleasant street, Watertown, Mass., where the company also has a warehouse.

Inland Engineering Co., Chicago, Ill., has announced the removal of its office from 6 North Michigan avenue to 505 Kensington avenue. This change was made in order to meet the demands of the company's rapidly growing business.

Burke Electric Co., Erie, Pa., manufacturer of direct- and alternating-current machinery, has established a branch sales office in Chicago at 310 South Michigan avenue, with Miles E. Standish in charge.

Bristol Co., Waterbury, Conn., manufacturer of recording instruments, announces the opening of a service station repair plant at 3617 South Ashland avenue, Chicago, Ill. The present salesroom and offices of the company will be maintained in the Monadnock building, Chicago.

Sullivan Machinery Co., Chicago, Ill., announces that its Pittsburgh office has moved into larger quarters in the Farmers Bank building, where it has had offices for many years. The additional space will greatly facilitate handling the business which has been steadily growing in this territory. William R. Jarvis is manager of this office.

Climax Engineering Co.'s plant, Clinton, Iowa, is illustrated herewith. It consists of complete machine shops, foundry, stock warehouses, assembling and general office buildings, etc. To supplement its line of gasoline engines, the company is also developing a line of crude oil engines of the Diesel type, with capacity ratings of from 50 to 400 hp., depending upon the number of cylinders. The officers of the company are: G. W. Dulany, Jr., president; Geo. W. Cravens, vice-president and general manager; H. W. Seaman, vice-president; H. P. Denkmann, vice-president; M. M. Cruise, treasurer; J. M. Thomson, secretary; J. C. Vant Hul, Jr., and W. E. Eberhart, assistant secretaries; E. D. Crowley, general sales manager; W. H. Johnson, purchasing agent.

Plant of the Climax Engineering Co., Clinton, Iowa

Personals

W. C. McDowell has been elected director and vice-president in charge of sales of the Traylor Engineering and Manufacturing Co., Allentown, Penn.

Captain R. J. Stewart of St. Joseph, Mo., a pilot on the Missouri river for 29 years, is now general manager of the Pioneer Sand Co. in that city.

L. A. Marshall, for a number of years service manager of the Industrial Works, Bay City, Mich., has been made sales engineer of the Chicago office at 1051 McCormick building.

George S. Githins, Pneumatic Equipment Co., has been appointed New England district representative for the **Pennsylvania Pump and Compressor Co.**, of Easton, Penn., with offices at 110 High street, Boston, Mass. Mr. Githins' long experience as a pneumatic engineer fits him well to handle industrial problems regarding compressor air service.

Obituary

William H. Harding, president of the Whitehall Cement Manufacturing Co., Philadelphia, Penn., died at his home in that city recently.

Trade Literature

Moore Lime Co., Richmond, Va. Booklet on lime dealing with its advantages and uses in construction.

Bucyrus Co., South Milwaukee, Wis. Bulletin M-10, illustrating and describing caterpillar mountings for railroad type shovels.

Industrial Equipment Co., Minster, Ohio. Catalog 15 on the Minster gasoline industrial locomotives, illustrating and describing in detail the Model F 8-ton locomotive.

Northern Blower Co., Cleveland, Ohio. Bulletin F 1002 illustrating and describing the "Norblo" exhaust fan manufactured by this company in both motor-driven and belt-driven types.

Sullivan Machinery Co., Chicago, Ill. Bulletin 77 H on angle compound compressors. Bulletin 77 K describing straight-line single-stage compressors. Bulletin 70 X (second edition) on clay-digging machines. Bulletin 78 B on vacuum pumps.

Gruendler Patent Crusher and Pulverizer Co., 941 North First street, St. Louis, Mo., has issued a folder describing its line of equipment with illustrations of its centrifugal pulverizer, swing hammer crusher, ring pulverizer, shaker screens, dryers, elevators, slow-speed air separator and ball-bearing pulverizer with air separator. The company states that it maintains a service engineering department for the convenience of its clients.

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Rock Products

Chicago, May 17, 1924 FOUNDED 1902 Volume XXVII, No. 10

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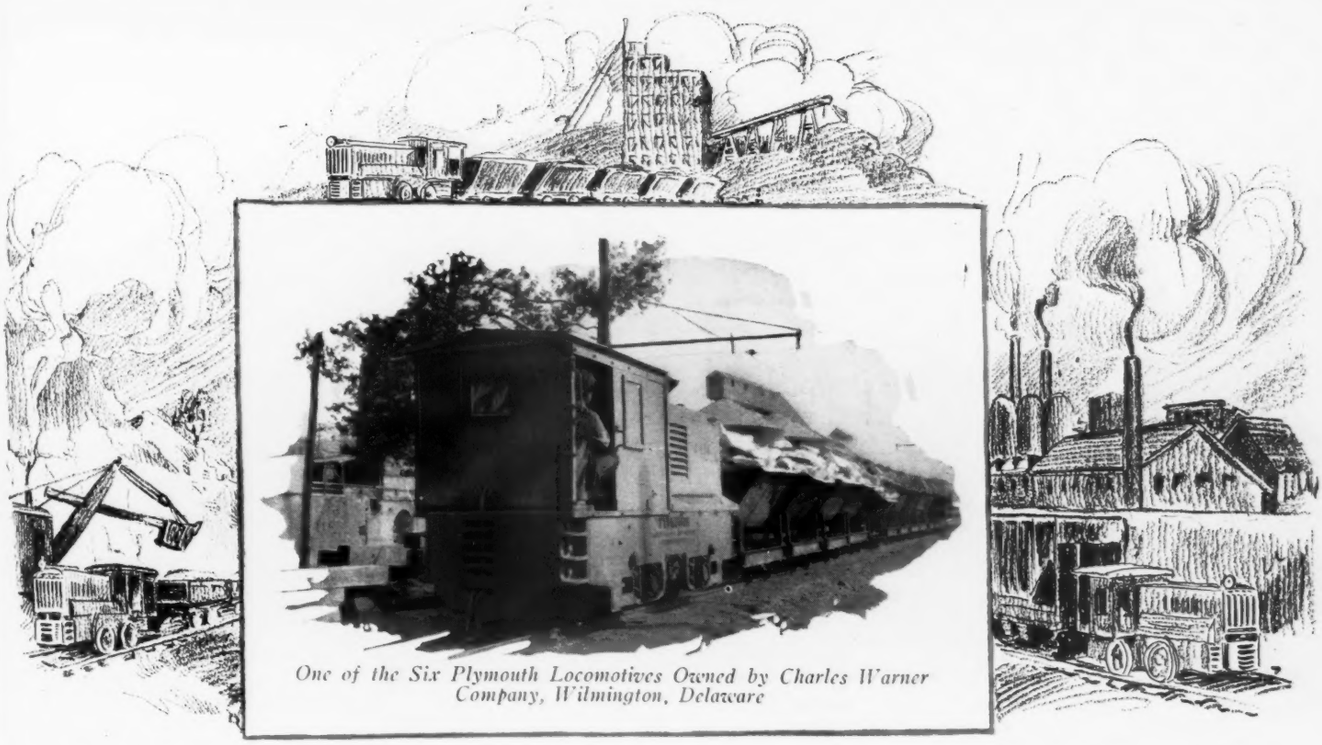

One of the Six Plymouth Locomotives Owned by Charles Warner Company, Wilmington, Delaware

IF all the manufactured gasoline locomotives were gathered in convention the Plymouths would occupy two-thirds of the seating capacity. It is their utility that enables them to predominate. Pep is the only word that has the punch to describe the "pick up and snap," the "hurry and get there." Ask the man who bought and used, and write for Bulletin "F."

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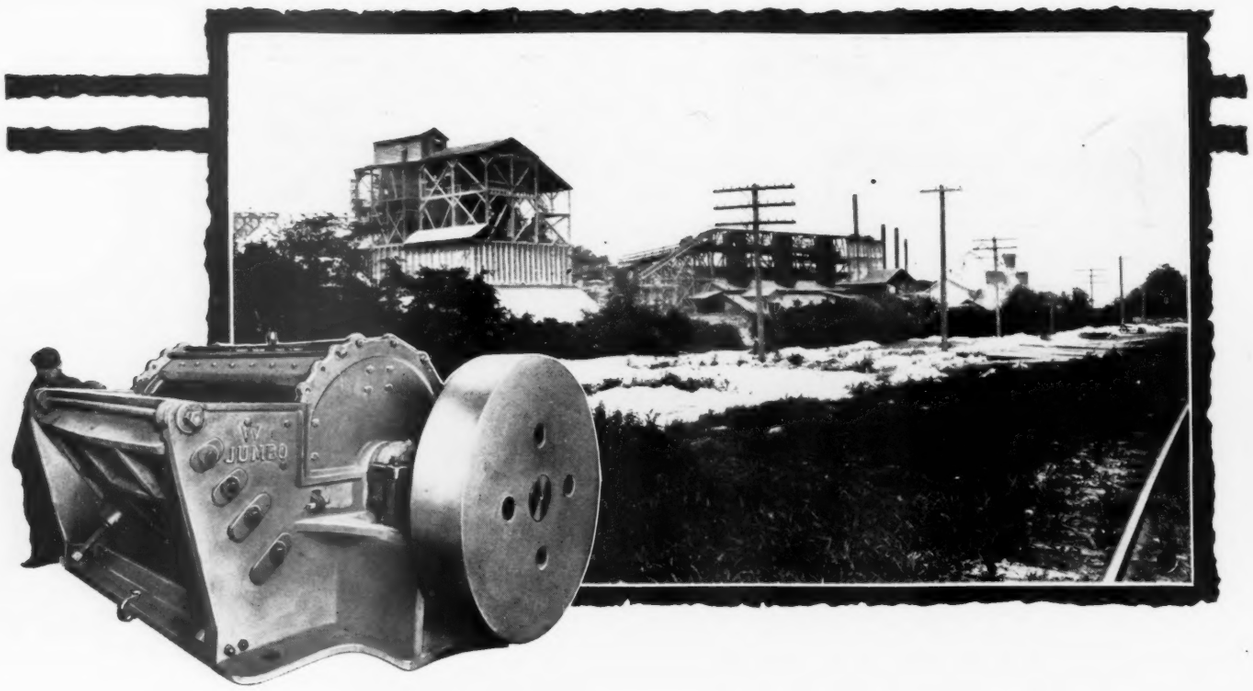

Dittlinger Lime Co. Installs Their Second Jumbo Crusher

Williams Hammer Crushers Adaptable to Every Crushing Operation

Cement—"Not excelled by any other type of crushing machinery."—Riverside Portland Cement Co., Riverside, Calif.

Lime—"Establishing a remarkable record."—Luckey Lime & Supply Co., Luckey, Ohio.

Agricultural Limestone—"Paid for itself in four months time."—Otto Orth, Webster Groves, Mo.

Asphalt Rock—"Using Williams crusher on asphalt rock since 1905 with greatest success."—Continental Asphalt & Petroleum Co., Dallas, Texas.

This prominent plant at New Braunfels, Texas, was so well pleased with their first Williams crusher that they later installed a second and larger machine with a capacity of 100 tons per hour of 2½" macadam. The "Jumbo" crusher as installed will reduce rock as large as 16" to macadam and in many cases has replaced two smaller ratio crushers as well as extra conveyors, drives and elaborate buildings. First cost is less, crushing costs lower and plant operation simplified.

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Any size stone, from agricultural size to unusually uniform macadam can be made with the "Jumbo" simply by changing the grates. E. H. Bradbury, Kansas City, using one for macadam says: "Supplanted Jaw crusher and Gyratory and product is superior." If you have rock to crush, any size to any fineness, write us.

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